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ABSTRACT

This report presents information on a study to project labor force demand in Korea against the existent capacity of supply and to explore corrective measures to ensure balance between demand and supply. Chapter I describes the background and goals of the study. Chapter II examines human resource developmentt of Korea in the period 1961-1979 with special attention to the relationship between labor force structure and economic growth. Analysis is made of total population, economically active population, school population, the current system of vocational training, and employment trends by industry, occupation, and education level. Chapter III describes models for the projection of demand for and supply of labor and presents statistical data projected by these models by industry and by occupation. Chapter IV examines the sources of labor supply in relation to projected demand and additional requirements in a long-term perspective. Chapter V explains the gap between supply and demand and concludes by suggesting three strategies for labor force development: qualitative development of higher education, strengthening of technical education and vocational training, and improvement of the labor force development system. Sixty-six data tables and 12 diagrams are provided. Projected data related to demand and supply in all occupations are appended. (YLB)

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MANPOWER PROJECTION AND STRATEGIES 1979 - '91

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PREFACE

This publication is an English version of an earlier research report produced by KEDI. It is a result of KEDI's new effort to distribute its earlier research findings to share the experience obtained in Korean education with the educators, educational researchers and administrators in the international community. We hope that this tranlated version of our earlier work will be used as a reference to those in the profession.

The economic growth of Korea slowed down as the result of the worldwide repercussion of the second oil crisis. A set of new problems compeled concern for a new approach to tide over economic crisis and sustain its growth. The new thrust of economic development sets forth an outcry for technological innovations and a dramatic change of employment policy. Accordingly, demands are expected to increase sharply for high-level manpower and precision machinery workers. Coming up for the fifth Five-year Social and Economic Development Plan, it has become imperative to plan for the development of manpower in relation to the five-year social and economic development indices.

The first task for this study was to project manpower demand against the existent capacity of supply, necessary to ensure a sustained economic growth, and this was followed by the exploration of corrective measures to ensure balance between demand and supply. Since projections were made on the basis of inaccurate data, the findings of this study leave much to be desired. Follow-up studeies are in order under a different set of premises and assumptions.

In concluding this study, we owe a note of thanks to the Ministry of Science and Technology for financial assistance. Our thanks are also due to Economic Planning Board, the Ministry of Education, and the Ministry of Labor Affairs. Besides, vocational training centers deserve our tributes for cooperation. The specialists who have participated in a consultative capacity are credited with valuable inputs in the form of expertise. We wish to take a special note of contribution of Dr. Manuel Zymelman, World Bank. We are specially grateful for the Minister of Science and Technology who allowed us to translate the report into English.

It is much of our desire that this study will be of assistance to the establishment of a long-term social and economic plan.

Kim Young-shik
President
Korean Educational Development Institute

SUMMARY

I. INTRODUCTION

As Korea is set on a direct road to a dynamic process of development, industrial structure is expected to take a different complexion with heavy and chemical industries assuming a larger proportion. This structural change of industry poses significant implications for the quality of labor force.

This changing milieu suggests the desirability of projecting manpower demands in industrial occupations against the available manpower at present and prescribing strategies for manpower development. This study features specific reference to the growth targets set in the Fifth and Sixth Five-Year Economic and Social Development Plans.

The purposes of this study are to examine the general status of human resources at present, project manpower demands needed for the attainment of economic growth targets in industrial occupations, identify gap between the demand and supply of manpower and suggest strategies for balancing supply with demand in a long-term perspective.

II. TOTAL HUMAN RESOURCES

Total population in Korea rose from 25.8 million in 1961 to 35.8 million in 1976. It increased at the average rate of 2.20% per annum in the span of 15 years. For the next 15 years, the population growth rate is anticipated to go down to 1.55% per annum and projecting total population at this rate, it will reach 45.3 million by 1991. The structure of population in age bracket from 0 to 60, which now resembles a pyramid, will approximate an ideal type by this time.

The size of total population necessarily bring with it a commensurate increase in the economically active population – from 13.06 million in 1976 to 17.29 million in 1986 at the annual growth rate of 2.85%. At the same time, the level of education in general is on the upsurge trend, heradlding the advent of a highly industrialized society based on higher quality of labor force.

III. MANPOWER DEMAND AND REQUIREMENT

The basic assumption underlying manpower projection is that the present increasing trend of value-added during the period of Fifth Economic & Social Development Plan will continue until 1991.

The statistical method used in projecting total demand for labor force in major industries is multiple correlation and regression analysis. In this analysis, value-added, the total demand for labor force in the previous year and the proportion of added value in heavy/chemical industry to the sum of added value in all manufacturing industries were selected as independent variables. In order to determine the demand for labor force in each of major occupations, labor productivity, the number of employees and the structure of value-added were selected as variables. In determining the demand for labor force by subgroups within major occupations, the occupational structure in Japan in 1975 was adopted as the target structure to be achieved by 1991.

The total number of employees is likely to increase from 13.66 million in 1976 to 18.45 million in 1991. Looking at the increasing trend by occupational field, the agriculture and fishery are expected to see a gradual shrinkage, while mining/manufacturing and tertiary industries to experience substantal increases in employment. To provide concrete data, agriculture and fishery accounted for 35.77% of the total employment, mining and manufacturing for 23.69% and tertiary industry for 40.54% in 1979. This composition ratios will change to 20.71%, 27.64% and 51.65% in 1991, with the tertiary industry occupying the largest share of the total employment.

Summing up these trends, there will be tangible increase in the numbers of professionals, technicians, administrators and managers, while the bulk of farmers and fishermen will shift into other occupations. Such a transformation of occupational structure is the result of an increasing demand for the occupations which require higher attainment of education. The total demand for scientists, engineers, technicians and skilled workers is expected to increase from 641,000 in 1979 to 1,402,000 in 1991, with a commensurate increase in the proportion from 4.69% to 7.60%. In the manufacturing industries, engineers and technicians will account for 4.00% and skilled workers for 12.60%, totalling 16.60%.

In the field of scientific and technical manpower there were 16,800 scientists, 180,800 engineers and technicians and 443,600 skilled workers in 1979. These figures are projected into 83,000, 440,700 and 878,100 respectively in 1991. By occupation in this field, mechanical engineering, civil engineering, architecture, electricity and electronics will show the most tangible increases of employment.

The number of medical doctors and para-professionals in this field are expected to increase 150,000 in 1979 to 433,000 in 1991, showing 2.8 fold increase. Teachers which numbered 230,000 in 1979 will number 458,000 in 1991.

In order to obtain the numbers to be supplied, attrition rates (2.00% in professional, technical and related workers, 2.55% in administrative and managerial workers, and 1.44% in production and related workers) were applied against the gross increases of employment. The findings of this computation are given below.

(1) The professional, technical and related workers will number 473,000 and 560,000 in the fifth and sixth economic development periods respectively, totalling 1,622,000 to be supplied by 1991.

(2) The number of administrators and managers to be supplied during the same period is 338,000. This force, together with professionals and engineers, occupies the bulk share of higher level manapower.

(3) Skilled workers are defined as the high school graduates among production and related workers such as metal processing, chemicals processing, textile, electricity, electronics, black smith, toolmaking, machinery installation, assembly, plumbing, welding, construction, and operators. The skilled workers to be supplied will reach 1,430,000, which beakdowns into 110,000 for additional supply each year.

IV. MANPOWER PLAN

Having projected the demand for manpower into 1991, it is necessary to examine the current supply capacity and consider some measures to balance supply with demand. The present capacities of supplying high level manpower include colleges/universities and junior teachnical colleges (including junior teacher's colleges). Assuming the present capacity of supply, there will be 93,400 college graduates and 92,000 junior college graduates in excess of the requirements during the period 1979-1991. From the viewpoint of manpower, there is little need to increase student graduation quota beyond the scope which has already been made public in 1980, although it may be subject to reconciliation from the viewpoint of social demand. Assuming the present admission quota and graduation quota to be applied for the future, the number of college students will reach 915,000 after 1986. This figure boils down to 20-22 out of every thousand people in the nation. In the case of scientists, however, there will be a shortage of 30,000 in the period 1979-91, providing that the present enrollment quota of the graduate schools related is maintained. In order to fill this gap, it is required that the admission quota be increased by 600 each year in the period 1982-86 and by 5000 each year in the period 1987-1991.

Assuming the present supplying capacities of engineering colleges to be maintained, the period 1982-86 is expected to see a surplus of

17,400 engineers, while a shortage of 18,500 is expected during the period 1987-91. The surplus and shortage will even out by 1991. In the case of technicians – graduates of junior technical or vocational colleges, a surplus of 88,600 is expected by 1991. Judging from these data, it is not necessary to increase the supply of engineers and technicians. Rather, the quota may well be adjusted among some courses affected within the engineering college and among all courses within the junior technical colleges, together with efforts to innovate programs per se in a new direction.

As regards the supply of skilled workers in major sectors of industry, 911,000 are needed in the period 1979-91. But the technical high schools and vocational training centres have the capacity of supplying 876,000 until 1991, showing 125,000 to be secured through the other channel. To secure the required number of skilled workers, some measures must be conceived; it seems more desirable to increase the supplying capacity of vocational training centres than increasing those of technical high schools, to provide avenue for the general high school graduates to become skilled workers.

V. MANPOWER DEVELOPMENT STRATEGIES

Projection of manpower demand against supply capacity reveals gaps which are both quantitative and qualitative. Strategies for manpower development were considered with concern for how to fill out these gaps in a long-term perspective.

First, from the viewpoint of high level manpower demand, it is not necessary to increase enrollment of higher education. Rather, the increasing sophistication of industrial structure draws greater attention to the quality of high level manpower and this necessitates the development of innovative programs which produce scientists standing on the rapidly advancing frontiers of technological knowhow. The qualitative development of higher education may well be facilitated by promoting graduate schoolcentred program while expanding the training capacity of Korea Advanced Institute of Science and Technology. The program of engineering and junior technical colleges also need to be reformed so as to place emphasis on the qualitative aspect. There will be a need to consider measures to secure physical facilities as well as professors, for they are the prerequisite for improving the quality of education at this level.

Second, technical education in general high school needs to be strengthened together with vocational training programs in the out-of-school system. The establishment of technical high school requires an enormous capital investment in facilities and equipment. This financial requirement, coupled with the regidity of its programs in responding to new needs, sets limits to the expansion of enrollment in technical high school. In view of a large proportion of general high school graduates joining labor force, a technical education offered by general high school merits attention for its potential contribution to the development of skilled manpower. Strengthening technical education requires a substantial increase in capital investment in facility and staff development. Vocational programs in the out-of-school system offers many advantages in meeting needs as diversified by regional characteristics. In this connection, it is worthwhile to have a system for a sharing of training fee among the enterprise beneficiaries of training programs. This fee may be levied in the form of a revenue source for human resource development at large, which ensures the commitment of enterprises to a wider variety of educational programs.

Third, manpower development system needs to be reformed with respect to its managerial aspect. The managerial reform may include differentiation or integration of educational functions among school levels and among programs, establishment of a nationwide employment and occupational information service system and reform of skill certification system. Of particular importance is the establishment of management machinery which provides a systematic approach to manopwer planning, capable of conducting in-depth research and serving information needs as related to manpower planning.

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I. INTRODUCTION

The economic growth which Korea has achieved features a havier reliance on the labor-intensive export industries. Coming into the late 1970's, its economic growth slowed down, as export industries, the prime mover of rapid economic growth, were losing competitiveness in the international market relative to abrupt increases in price and wage. The forthcoming energy crisis dealt another blow to the unfledgling industries with the consequent trade deficit, low employment and phenomenal increase of price. The new economic development compeled concern for alternatives to sustain economic growth,[1] and demand was heighting for technological innovation and the change of policy pertaining to employment affairs.

Enterprises in all fields of manufacturing industries are now in the process of shifting from labor-intensive to capital-intensive structure. The government is formulating policy which supports the shift of industry to heavy and chemical one. The new policy emphasis created new needs; sophisticated production typical of capital-intensive industry necessitated the manpower of high calibre. The new need put a different complexion labor structure, heightening concern for the quality of labor force. In the context of new developments, it is imperative that a comprehensive and systematic plan be established to meet educational and trainning needs associated with manpower development.

Several attempts have been made at manpower planning since the early 1960's as part of economic development plan. Concurrently with the First Economic Development Plan, Economic Planning Board formulated the First Five-year manpower Development Plan (1962-66) with special reference to Scientific and Technological field. This plan was followed by a series of manpower plans leading up to the sixth plan. For the formulation of the Second Five-year Manpower Development Plan, the responsibility of planning was transferred from Economic Planning Board to the Ministry of Science and Technology in the context of the latter's attempt to develop a comprehensive scheme for the development of science and technology. Developed thereafter was "Long-term Supply and Demand of Manpower and Policy Direction (1967-'86)." The fifth plan (1972-'81) is distinguished from previous ones by addressing to the manpower requirement of heavy and chemical industries. The sixth plan (1977-'81) details out a series of action to secure the manpower projected for the Forth Five-year Economic Development Plan. All of these plans concerened themselves with scientific and technological manpower in connection with policy support for heavy and chemical industries. The first attempt to cover all areas of industry was made by Korea Educational Development Institute in its long-term projection of manpower requirement and policy prescription, which led to the publication of report entitled "Manpower Projection and Strategies for the Republic of Korea (1979-'91)."

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[1] Economic Planning Board, *The Fifth Economic and Social Development Plan (1982-86) : Guideline*, 1980.

The structural change of industry toward heavy and chemical industry is expected to alter occupational structure,[2] and the increasingly fierce competition among nations necessitates higher quality of labor force. It is essential that a comprehensive manpower development plan be developed in a long-term perspective.[3] Its importance is heightened by the unique reality of Korea; in a country with scant natural resources, human resource development alone offers the critical path to economic development.

The sixth manpower development plan in 1978[4] projected manpower requirement for a sustained economic growth, assessed the gap between supply and demand and suggested measures to fill up the gap. This plan was developed within the framework of the fourth economic development plan. In the meantime, international and social mileu had changed so as to necessitate the modification of the plan on a realistic basis. The projected manpower requirement became obsolete, with much of data to be updated. This study was originally initiated by the need to supplement the previous plans. As structural change was demanded of the fifth economic development in response to new developments, a new projection model was developed against new targets. The purpose of this study is threefold. In the first place, it assessed human resource at present and projected manpower requirement for a sustained economic growth up to 1991. The second purpose was to break down the manpower requirement by occupation and the level of proficiency. In the last stage, the gap between supply and demand was closely examined with attention directed to policy measures to fill up this gap. Since this planning was based on the quantitative targets of the Fifth Economic and Social Development Plan, a change in one of these targets entails the necessity of readjusting manpower requirement in the pertinent occupation. To define the scope of study, some assumptions and premises were established, which merit close attention.

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[2] Mannel Zymelman, *Occupational Structures of Industries* (Washington, D.C.: Education Department, World Bank, 1980.

[3] Theordore W. Schultz, *Investment in Human Capital* (New York: The Free Press, 1971; Frederick Harbision and Charles A. Myers, *Education, Manpower and Economic Growth: Strategies of Human Resource Development* (New York: McGraw Hill, Inc., 1964).

[4] Korea Development Institute, *Long-term Supply and Demand of Manpower 1978-'79* (Seoul: Ministry of Science and Technology, 1964).

Report on this study consists of five chapters and statistical data tables. Chapter I describes the background and goals of study. Chapter II examines human resource development of Korea in the period 1961-'79 with special regard to the relation between manpower structure and economic growth. In this, analysis was made of total population, economically active population, school population, the current system of vocational training and employment trend by industry, occupation and education level. Chapter III describes models for the projection of manpower requirement and presents statistical data produced by these models. Chapter IV examines the sources of manpower against the projected manpower requirement. Chapter V explains the gap between supply and demand and was concluded by suggested policies. Projected data related to demand and supply in all occupations are appended.

II. HUMAN RESOURCE IN KOREA

There are several factors to determine the labor force available for production and labor productivity. Salient among them are total population, its distribution between sexes, among age groups and among education levels, the ratio of economically active population, the capacity of existing educational and training programs and the quality of vocational education and training. This chapter examines the trend of total population as related to these factors.

1. Population

To look at the changing trend of total population from 1961 to 1976, population increased at the average rate of 2.2% per annum, showing a net increase of 10,000,000 for 15 years. From 1976 to 1991, the ending year of the fifth economic development plan, it is expected to increase at the average of 1.55% per annum, adding another 10,000,000 to the present population. Based on this projection, total population is expected to rise from 26,000,000 in 1961 to 36,000,000 by 1976 and to 45,000,000 by 1991. It doubles in every 15 years.

To look at population distribution among age groups, it is possible to detect some changing tendencies. Since family planning program was introduced, population control has been more intensified with the diversification of measures, including population education, migration, etc. The impact of population control measures is belt in the age group below 4. In 1961, the population in this age group accounted for 18.4% of total population, which diminish to 12.3% in 1976 and 10% in 1991. The changing proportion of this age group causes a wave of change to reach higher age groups. The proportion of age group 5-14 diminishes, while that of age group above 15 increases. Proportion change of age group shifts population structure from pyramid form to an ideal one.

Table II-1 Population Structure by Age Group, 1961-1991

Unit: Thousand

Age Groups	1961		1976		1981		1986		1991		Average Increase Rate Per Year	
	Popul.	Percent	Popul.	Percent	Popul.	Percent	Popul.	Percent	Popul.	Percent	1962-1976	1977-1991
Total	25,766	100.0	35,860	100.0	38,807	100.0	42,088	100.0	45,251	100.0	2.20	1.55
0-4	4,729	18.4	4,392	12.3	4,162	10.7	5,586	10.9	4,532	10.0	0.49	-0.21
5-14	6,336	24.6	9,052	25.2	8,798	22.7	8,357	19.9	8,564	18.9	-2.38	0.37
15-24	4,750	18.4	7,828	21.8	8,906	22.9	8,859	21.0	8,614	19.0	3.38	0.64
25-34	3,638	14.1	4,797	13.4	5,786	14.9	7,548	17.9	8,622	19.1	1.84	3.91
35-44	2,532	9.8	4,157	11.6	4,353	11.2	4,575	10.9	5,556	12.3	3.31	1.93
45-59	2,494	9.7	3,627	10.1	4,410	11.4	5,254	12.5	5,855	12.9	2.50	3.19
Above 60	1,287	5.0	2,007	5.6	2,394	6.2	2,909	6.9	3,508	7.8	2.96	3.72

Source: Korea Development institute, *long-term economic and social development 1977-1991*, 1977, p. 185.

These trends are better depicted by Diagram II-1 which shows proportional change of population between sexes and between age groups at the interval of 15 years. Population shows a balanced distribution between male and female in all age groups exclusive of the group above 65. In this, female population assumes a larger proportion of total population. The proportional change of population poses important implications for economically active population, education and social welfare.

The diminished proportion of population in age group below 14 offered a breathing spell to relieve the long-standing over-crowded situation of classroom in primary school and to provide quality education. This trend is considered an welcome prelude to the imminent extension of compulsory education to middle school. The long-term effect of this trend will be manifested in the higher quality of labor force.

The increased proportion of age groups above 15 may bring forth a commensurate reduction in employment opportunity directing attention to the existent policy pertaining to employment. Advanced medical science and economic growth account for an enlarged proportion of aged people. This trend is taken for an urge to promote social welfare and to develop a lifelong education which constellates the labor of aged people into productive works.

2. Economically Active Population

Economically active population is defined as those in ages above 14 able and intending to engage in productive works above exclusive of soldiers, combat policemen, prisoners, those engaging in home works, students, decrepit people, the handicapped and the unemployed.

According to Table II-2, the percentage of age groups above 14 to total population is expected to be 69.64% in 1986, 7% over that of 1976. To look at its increasing rate at the interval of five years, the average increase rate per annum slows down; it diminishes from 2.86% during the period of Fourth Economic Development Plan to 2.45%

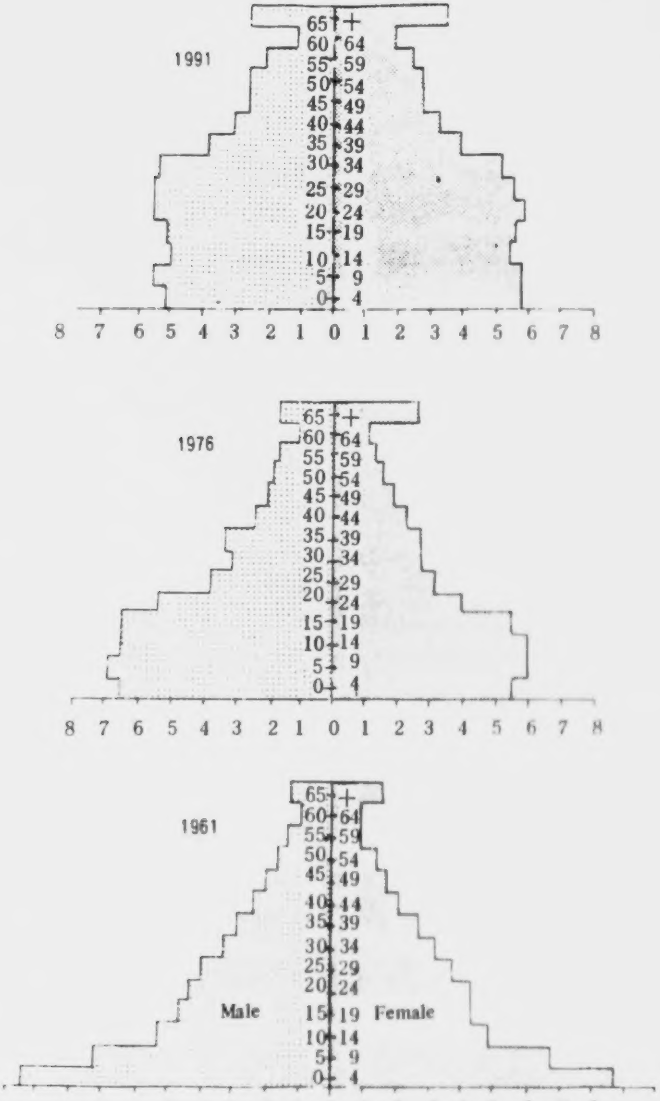

Diagram II-1 Change of Population Structure by Age Group and Sex in the period of Fifth Economic Development Plan. The percentage of male population rises from 48.4% in 1976 to 49% in 1986, 1% below that of female population.

Table II-2 Change of Economically Active Population

Unit: Thousand

Classification	1976	1981	1986	Aver. Incr. Rate Per Year	
				1977-1981	1982-1986
Total Pop.	35,860	38,807	42,088	1.59	1.64
Male	18,063	19,587	21,288		
Female	17,797	19,220	20,800		
Pop. Above 14	22,549	25,964	29,311	2.86	2.45
(Percentage)	(62.90)	(66.91)	(69.84)		
Male	10,912	12,572	14,368		
Female	11,637	13,392	14,943		
Eco. Active Pop.	13,061	15,025	17,293	2.84	2.85
(Percentage)	(57.90)	(57.87)	(59.00)		
Employed Pop.	12,556	14,299	16,714	2.63	3.17
(Percentage)					
Primary Indus.	5,601	4,896	4,515	-2.73	-1.63
	(44.60)	(34.24)	(27.01)		
Sec. Indus.	2,743	3,553	4,287	5.31	3.83
	(21.90)	(24.85)	(25.65)		
Tertiary Indus.	4,212	5,850	7,912	6.79	6.22
	(33.50)	(40.91)	(47.34)		
Unemployed	505	726	579	7.53	-4.63
	(4.00)	(4.83)	(3.34)		

Source: Economic Planning Board

The employed population is distributed among primary industry (44.6%), secondary industry (21.9%) and tertiary industry (33.5%) in 1976. By 1986, the ending year of Fifth Economic Development Plan, its distribution among the three industries is expected to take an entirely different complexion; tertiary industry accounts for 47.34%, secondary industry for 25.65% and primary industry for 27.41%. This change is indicative of the current trend that the labor force of rural areas is obsorbed into manufacturing, social overhead capital and service industries.

The percentage of unemployed population is 4% in 1976 and rises to 4.8% in 1981 and again drops to 3.3% in 1986. The increased proportion of unemployment registered in 1981 is the result of economic stagnation.

Table II-3 shows the distribution of economically active population among the different levels of educational attainment. Comparing the pattern of distribution between 1960 and 1975, it is noticed that educational attainment at large has improved considerably in a matter of 15 years. 1960 has 43.7% of economically active population without any experience of schooling, which diminishes to 16.3% in 1975. In the meantime, the percentage of those with 7-9 years of school increases from 9.6% to 22% and those with 10-12 years of schooling rise from 7.6% to 19.3%. College graduates and above account for 6.4%, 3.8% over that of 1960. The increasing trend of educational attainment is graphically depicted by Disgram II-2.

The rising educational attainment is construed as contributing to high quality of labor force. This trend is precipitated by the forthcoming extension of compulsory education years, measures taken to equalize high school education and increased admission quota to colleges. As policy support was intensified for the development of high-level manpower in 1980, those with highest educational attainment is expected to from a larger proportion of economically active population.

It is important to distinguish between occupations in terms of

Diagram II-2 Composition of Population by Educational Attainment

(Aged 14 Years and Over)

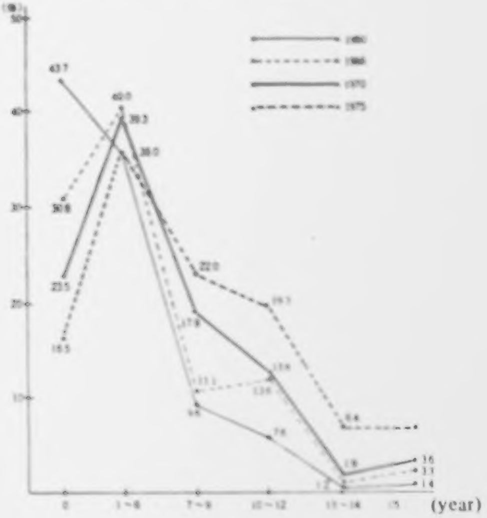

Table II-3 Population Structure by Education Level (above 14)

Schooling Years	1960	1966	1970	1975
0	43.7	30.8	23.5	16.3
1-6	36.0	40.0	39.3	36.3
7-9	9.6	11.1	17.9	22.0
10-12	7.6	13.6	13.8	19.3
13-14	1.2	1.2	1.9	6.4
15-	1.4	3.3	3.6	
Unknown	0.5	–		

educational attainment required and to examine the distribution of population between education levels within an occupation. Diagram II-3 compares employment structure by occupation and education level between 1960 and 1975. Over 15 years, education level has shown a steady increase in all occupations. It is technological areas and managerial and administrative positions that show the highest increase of employees with higher education. Even in sale, production, agricultural and fishery works which require minimal education, the proportion of those with elementary education diminishes, giving way to those with secondary education.

The 1960's distribution of economically active population features that those with elementary education account for 84.2% and those with higher education for a negligible 2.4%. In 1975, the proportion of elementary education diminishes to 62%, while those of secondary and higher education rise to 32.2% and 5.8% respectively.

3. Manpower Development Through Formal Education System

The quality of labor force is in a large measure determined by education, and a change in enrolled population is sure to cause change in the quality of labor force. Table II-4 shows the changing trend of enrolled population on each school level. Total population enrolled in schools in 1979 is 10,167,425 which shows more than twofold increase over the 1961's population. This accounts for 27% of total population in 1979. The most phenomenal increase is registered in higher education, particularly at junior technical colleges which show more than 14-fold increase.

Table II-4 Change in the Composition of School Population

School Levels	1961		1976		1979	
	Students	Percent	Students	Percent	Students	Percent
Total	4,893,387	100.00%	9,279,036	100.00%	10,167,425	100.0%
Kindergarten	17,215	0.35	37.197	0.40	57,430	0.56
Primary Sch.	3,854,779	78.78	5,503,737	59.31	5,640,712	55.48
Middle Sch.	624,425	12.76	2,116,635	22.81	2,394,620	23.55
High Sch.	282,301	5.77	1,253,676	13.51	1,565,355	15.40
Jr. Voc. Col.	10,958	0.22	122.690	1.32	153,174	1.51
University	103,709	2.12	229,811	2.48	330,345	3.25
Graduate Sch.	–	–	15,290	0.17	25,789	0.25

In 1961, the population of primary schools accounts for 80% of school population which diminishes to 56% in 1979. This trend demonstrates that an increasing larger proportion of school population pursue higher levels of education. It is largely through the formal educational system that high-level manpower is developed.

4. Manpower Development Through Vocational Training System

Vocational training system in Korea was formally institutionalized

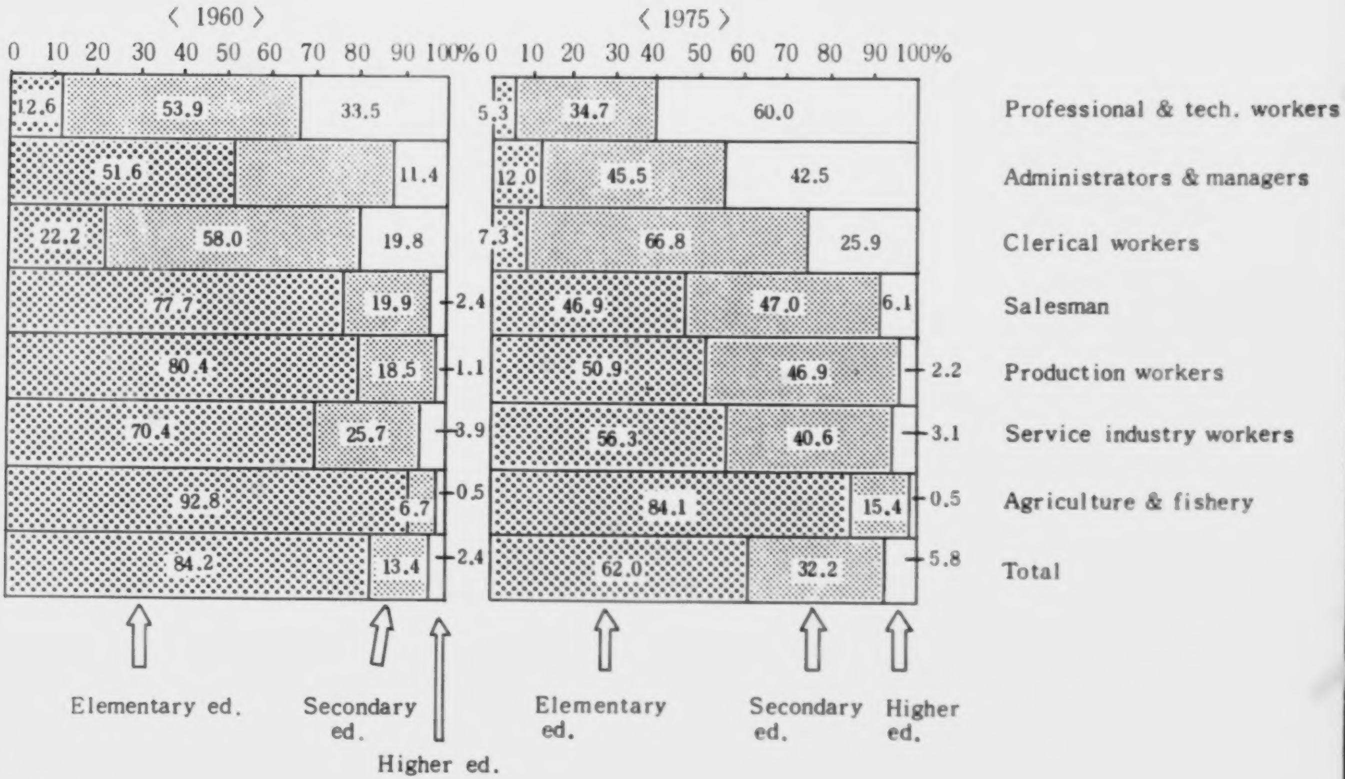

Diagram II-3 Change of Employment Structure by Occupation and Education Attainment with the promulgation of vocational training law in January 1961. To look at its structure as existing in 1978, Vocational Training Committee exists within the Ministry of Labor Affairs, responsible for the formulation of policies governing vocational training. The Bureau of Vocational Training within the Ministry of Labor Affairs establishes vocational training plan and criteria, provides technical cooperation and exercises supervision on the administration of vocational training at local offices.

There are 35 local offices which assume supervisory role on various vocational training institutes. The vocational training institutes are broadly classified into public vocational training institute, in-plant vocational training and authorized vocational training organizations.

Table II-5 Numbers of Vocational Training Institutes and Trained Craftsmen

Training Inst.	Number of Inst.	Trained Craftsmen (1967-'79)	Percent	Annually Trained
Total	679	717,128	100.00	55,164
Public Voc. Inst.	88	172,958	24.12	13,304
Corporations	18	40,543	5.65	3,119
Gov. Agencies	58	73,047	10.19	5,619
Local Gov. Agencies	12	59,368	8.28	4,567
Replant Inst.	558	448,344	62.52	34,488
Independent Inst.	536			
Combined Inst.	22			
Authorized Org.	33	95,826	13.36	7,371
Social Welfare Org.	12			
Non-Profit Corp.	21			

Source: The Ministry of Labor Affairs, *Status on Vocational Training*, May 1978.

Total number of vocational training institutes is 679 which have trained 717,128 craftsmen from 1967 to 1978. 55,164 craftsmen have been produced per annum. The in-plant vocational training institutes have produced the largest number of craftsmen, which accounts for 62.52% of total. The shares of public vocational training institutes and authorized organizations are 24.12% and 13% respectively.

Vocational training is offered on two levels–instructor's course and craftsmen's course. The former again divides up into regular training, license training, in-service training (retraining), refreshment training and job change training.

Table II-6 Number of Trained Instructors

Courses	Total	1967-1971	1972	1973	1974	1975	1976	1977	1978	Annually Trained
Total	2,803	445	184	180	220	292	521	224	737	234
Regular Training	1,196	–	66	150	111	177	159	224	309	171
License Training	1,607	445	118	30	109	115	362	–	428	134

Source: Ministry of Labor Affairs, *Status on Vocational Training*, May 1978.

The vocational training system has produced 2,803 instructors from 1967 to 1978 at the average rate of 234 per annum. Regular training course has produced 1,198 instructors and license course 1,607 instructors.

The trained craftsmen are shown by table II-7. The number of annually trained craftsmen has increased by 30.31% each year. Public vocational training institutes have shown a steady increase in the number of annually trained craftsmen and the highest increase rate per annum (67.18%) is registered in vocational training corporations. It is worthy of attention that in-plant vocational training institutes, the main source of craftsmen, have shown higher annual increase rate (30%) in the number of trained craftsmen than public institutes and authorized organizations. This trend is in the right direction of responding to the increasing need of craftsmen in modern society. It will be sustained over many years and this poses some important implications for educational programs in school.

Table II-7 Number of Trained Craftsmen by Year

Institutes	1967	1969	1971	1973	1975	1977	1979	Annual Increase Rate
Total	5,392	18,405	30,551	39,851	75,254	83,027	129,297	30.31
Public Voc. Inst.	1,502	8,419	8,833	16,234	17,480	14,878	28,488	27.79
Corporations	–	167	605	1,174	2,999	5,539	12,672	67.18
Gov. Agencies	1,502	3,291	3,443	5,164	10,240	7,468	8,594	15.65
Local Gov. Agencies	–	4,961	4,785	9,896	4,241	1,871	7,222	3.50
In-plant Inst.	3,290	8.527	14,303	14.124	42.667	58.739	90,992	30.00
Authorized Org.	–	1,459	7,415	9,493	15.107	9,410	9.812	25.83

Source: Ministry of Labor Affairs, *Status on Vocational Training*. May 1978

The Ministry of Labor Affairs established a vocational training plan in 1978 to support the implementation of Fourth Economic Development Plan. This plan envisions the supply of 432 craftsmen to make up for the expected shortage (724) of them, the upgrading of training quality particulary in heavy chemical and export industries, and the establishment of an effective training system which remains responsive to new needs. According to the plan, training facilites will be expanded on an incremental basis.

III. MANPOWER DEMAND AND REQUIREMENT

This chapter describes model for the projection of demand for and supply of manpower and presents data projected through this model by industry and by occupation.

1. Total Manpower Demand

A. Projection Method

Total labor demand was projected for the Fifth Economic and Social Development Plan and total labor required for the following period up to 1991 was projected under the assumption that the added value to the Fifth Economic and Social Development Plan will continue to increase at the same rate.

1) Classification of Industry

In accordance with Korea standard classification method, industries were classified into nine areas, and manufacturing industry into nine sub-areas (See Appendix).

2) Projection Model

Labor, together with capital, is one of production factors and ought to be treated as a derivative factor. The derivative factor is the function of added value (representing produced volume), wage, the input of other factors and technological development level. The determinants of labor demand are added value, labor demand in the preceding year and technical innovation.

$Li = f(Vi, Lli, VH/VM)$ .... Formula 1

Li : Total labor demand in "i" industry

Vi : Added value in "i" industry

Lli: Total labor demand in the preceding year

VH/VM: The ratio of added value in heavy and chemical industry to that in the manufacturing industry

The ratio of added value in heavy/chemical industry to that in the manufacturing industry is the indicator of technological innovation and an increase in this ratio means a shift from labor-intensive to capital intensive industry. An indirect method of projecting labor demand was to use labor coefficient which is the reverse of added value per employee.

$Li/Vi = f(Vi, LVli, VH/VM)$ .... Formula 2

Li/Vi : Labor coefficient in "i" industry

LVli : Labor coefficient in "i" industry in the preceding year

This report uses two approaches to the projection of labor demand: One is to use the function of labor demand and the other is to use labor coefficient. Of the two approaches, the one which had produced closer approximation to the reality was adopted for each industry. Three functions were used, namely; linear function, linear log function and log function. Of these three, the one which had shown the smallest error was adopted.

Li and Li/Vi were computed through regression equation derived from yearly data from 1965 to 1978. In agriculture and fishery field, reference was made to data presented by Economic Planning Board for the projection of labor demand. In manufacturing industry, the first step was to project labor demand in each occupation and total labor demand was projected by aggregating them.

B. Projected Manpower Demand

Labor demands projected through the aforegoing models are shown by industry on Table III-1. Total labor demand in 1979 was projected at 13,664,000, which is expected to rise to 14,300,000. The average rate of increase per annum was 3.17% during the Fifth Economic Development Plan, which would bring total demand to 16,714,000 in 1986. It will slow down to 2% during the Sixth Economic Development Plan, bringing total demand to 18,454,000 by 1991. Overviewing the table, the demand of agriculture and fishery industry will diminish in reverse to that of secondary and tertiary industry. Agriculture and fishery industry required the labor force of 4,887,000 in 1979. It will decrease at the average rate of 1.63% per annum in the period of the

Table III-1 Projected Manpower Demand by Industry

Unit: Thousand

Industry	1979	1981	1986	1991	Annual Over. Inc. (%)	
					1982-'86	1987-'91
Total	13,663.9 (100.0)	14,288.9 (100.00)	16,714.0 (100.0)	18,454.0 (100.00)	3.17	2.00
Agr. & Fishery	4,887.0 (35.77)	4,896.0 (34.24)	4,515.0 (27.01)	3,822.0 (20.71)	-163	- 3.39
Mining & Manuf.	3,237.0 (23.69)	3,552.6 (24.85)	4,287.3 (25.65)	5,100.5 (27.64)	3.83	3.53
Mining	111.0 (0.81)	117.6 (0.82)	129.5 (0.77)	140.0 (0.76)	1.95	1.57
Manuf.	3,126.0 (22.88)	3,435.0 (24.03)	4,157.8 (24.88)	4,960.5 (26.88)	3.89	3.59
Social overhead	5,539.9 (40.54)	5,850.3 (40.91)	7,911.7 (47.34)	9,531.5 (51.65)	6.22	3.80
Soc. overhead	1,510.6 (11.06)	1,652.2 (11.55)	2,275.0 (13.61)	3,203.9 (17.36)	6.61	7.09
Others	4,029.3 (29.48)	4,198.1 (29.36)	5,636.7 (36.73)	6,327.8 (34.29)	6.07	2.34

Note: Diagram III-2 International Comparison of Occupational Structure by Industry

Fifth Economic Development Plan and 3.39% in the period of the Sixth Economic Development Plan down to 3,822,000 in 1991. By contrast, the labor demand of mining industry will rise from 3,237,000 in 1979 to 5,100,000 in 1991. During the corresponding period, that of overhead capital and service industry rises from 5,540,000 to 9,530,000.

Over the base level of 1979, overhead capital and service industry show the largest increase of 11.11% (51.65%), followed by an increase of 3.95% (27.64%) in mining and manufacturing industry to be sustained until 1991. The percentage of labor force in agriculture and fishery industry will drop from 35.77% to 20.71%.

Compared with other contries, the percentage of agriculture and fishery industry in Korea is relatively large, while those of manufacturing and service industry are small. In the United States, the percentage of service industry is 59.54%. The percentage in Japan is 47.49%. In West Germany, mining and manufacturing industry accounts for 36.92%. The percentage of social overhead capital will resemble that of advanced countries.

2. Manpower Demand by Industry and Occupation

A. Projection

1) Classification of Occupation

The classification of occupation was in accordance with the standard classification method of occupation which had been systematized by Economic Planning Board. Each of the broadly classified occupations were reclassified so as to be fit for the purpose of projecting manpower demand and supply (See Appendix).

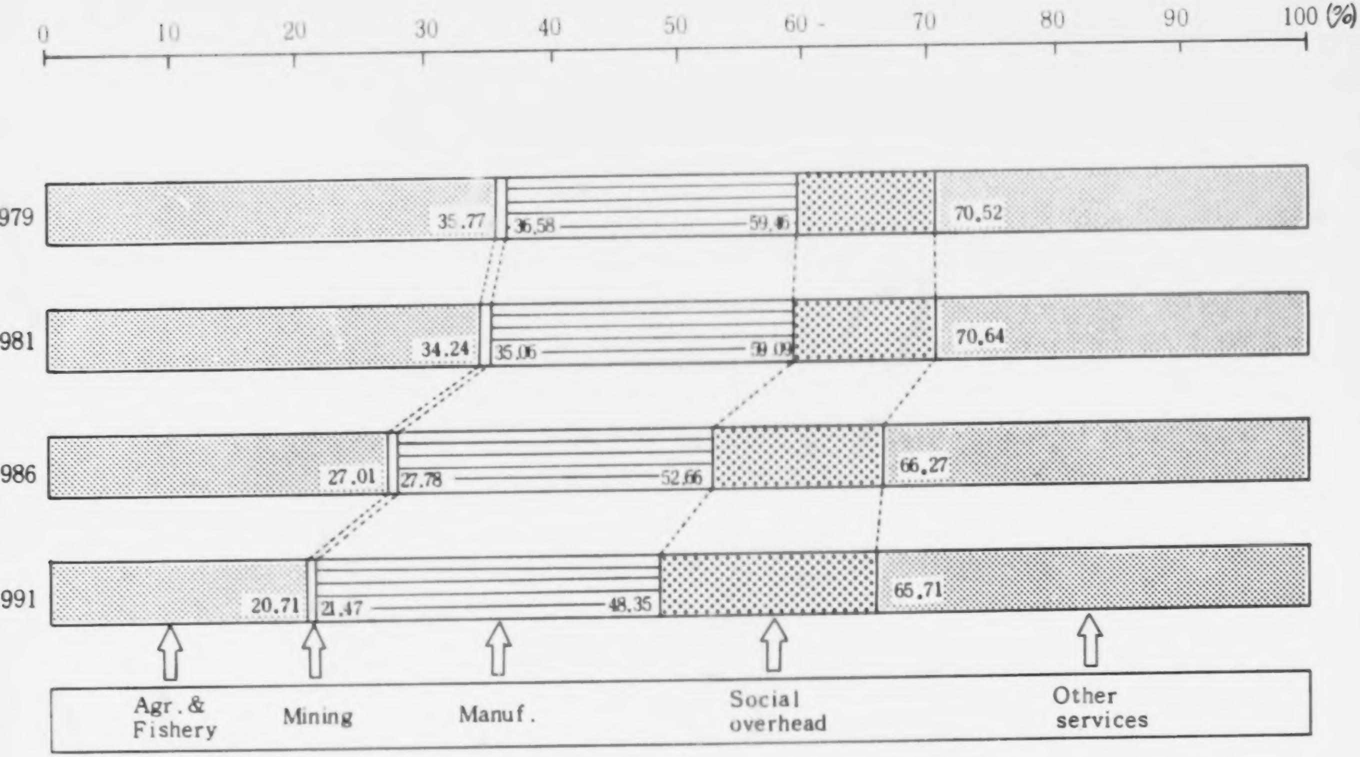

Diagram III-1. Change of Employment Composition among Industries.

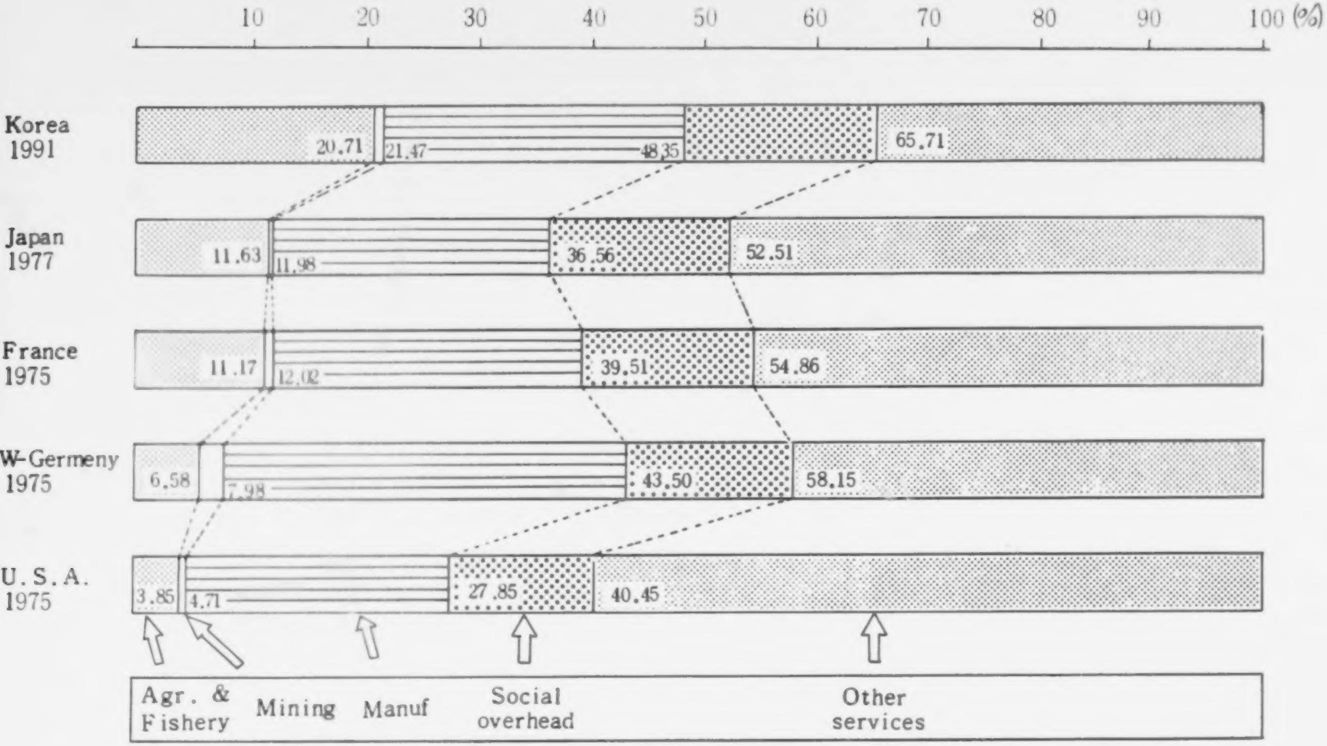

Diagram III-2. International Comparison of Employment Composition among Industries

2) *Projection Models*

(1) Major occupations

Providing that all industries share the same occupational structure which remains unchanged until 1991, there is no need to project manpower demand by occupation. Although occupational structure differs from industry to industry, the same reasoning holds true, if an increase in employment is equally shared among industries and occupational structure remains unchanged or idential among industries. In actuality, however, these assumptions are far from the reality. Assuming the opposite case of the assumption provides ground for the projection of manpower by occupation.

Basically, there are four models of projecting manpower demand, namely; 1) result-based projection, 2) international comparison, 3) sampling of a model industry structure and 4) variables projection. Apart from these, this study adopted econometric approach proposed by Zymelman [5] and simple regression analysis to obtain changing rate by industry occupation. On this basis, manpower demand was projected.

$Lij/Li = f(n)$

Lij: Labor demand of "j" occupation in "i" industry

Li: Labor demand of "i" industry

n: *Extraneous* variables including labor productivity, added value, capital per employee, etc.

Among the *extraneous* variables, labor productivity is indicative of quality; labor demand represents quantitative indicator and structural indicator is represented by the ratio of added value in an industry to that of total industry. Substituting these variable, the formula reads;

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[5] M. Zymelman, M. Morowitz, and I.L. Herrnstadt, *Manpower Requirements for Planning: An International Comparison Approach* (Boston: Northeastern University Press, 1966).

$Lij/Li = f(Vi/Li, Li, Vi/\Sigma Vi)$ .... Formula 3

Vi/Li: Labor productivity in "i" industry

$Vi/\Sigma Vi$: The ratio of added value in "i" industry to that of total industry

The function was derived from regression analysis of occupational structures of industries,[6] added value by industry and labor demand. When the function produced by regression analysis was considered inaccurate, reference was made to industrial and occupational structures of other countries, whose labor productivity was similar to those of Korean industries in 1975, 1986 and 1991. The function was evolved from the broad classification of industries identified in these countries.

(2) Minor Occupations (Sub-classified)

For the projection of manpower demand by industry and minor occupation, international comparison method was adopted. The variable which best represents occupational structure is labor productivity, R^2 (multiple correlation coefficient) of which is .48 – .88.[7] Therefore, the following assumptions need to be made if we are to predict the occupational structure of Korea in the future. First, the 1975's occupational structure of Korea is similar to those of other countries whose labor productivity is similar to that of Korea. The second assumption is that, with the increased productivity of labor, the occupational structure of Korea will resemble those of other countries in similar labor productivity levels.

Among comparable countries, Japan was selected as the country for reference, since its per capita income corresponded to the target to be attained by Korea and its occupational structure resembles that of Korea in many respects. The 1975's per capita income in Japan

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[6] Mannel Zymelman, *Occupational Structures of Industries* (Washington, D.C.: Education Department, World Bank, 1980).

[7] M. Zymelman, et al., *Manpower Requirements for Planning: An International Comparison Approach* (Boston; Northeastern Univ. Press, 1966).

($4,392) represents the target to be achieved in Korea by 1991. As shown by Diagram III-4, the 1975's occupational structure in Japan is the one envisioned for Korea in 1991. For the projection of manpower demand, the following formula was adopted. The projection of required craftsmen in mining was based on the increasing trend in Japan over the past 10 years (1965-1975).

$$(Lijh)t = (Lij)t. \frac{FLij\text{-}PLijk}{N} \quad \ldots\ldots\ldots\ldots\ldots \text{ Formula 4}$$

$$(Lij = \sum_{k-1}^{n} Lijk)$$

L : Total labor demand

FL : 1991's labor demand

PL : 1975's labor demand

N : 16 years (1975-'91)

i : 18 (9 industries, manufacturing industry reclassification 9)

j : Broadly classified occupation

k : Reclassified occupation

t : time (years)

(c) Special Occupations

The method of projecting manpower demand may be considered in two waysgeneral forecast and special forecast. While general forecast is applicable to all industries, special forecast has its applicability limited to service industry. The former sets the framework of a possible change in manpower demand. Hence it is necessary to make a special forecast of service industry within the framework circumscribed by general forecast.

Special occupation refers to those engaging in service industry, namely; teachers, medical personnel and public servants. The projection of manpower demand in this study included only those engaging in medical services to the exclucsion of teachers and public servants. Reference was made to the demand of teachers which had already been projected by Korea Educational Development Institute.

By medical service personnel are meant medical doctors, dentists, pharmacists and nurses. These personnel do not have direct bearing on economic development. But they assume an important dimension from the viewpoint of social welfare. Demand projection is made by analysing changing trend in the past, computing the number of population per a medical doctor, tracing its relation with per capita income and conducting a normative analysis. Projection in this study features a heavy reliance on quantitative approach, that is to compute the required medical personnel in relation to population and per capita income. The number of required medical personnel was derived from the countries with the per capita income of $3,200 in the early 1970's, which is targeted for Korea to achieve by 1991. Reflecting average attrition rate, computation formula reads;

$$MH_t = TP_t \cdot \frac{1}{PMH_t} \quad \cdots\cdots\cdots\cdots\cdots\cdots \text{Formula 5}$$

$$(PMH_t = MH_b (1 + {}_n\bar{D}_r))$$

MH : Number of medical service personnel
T P : Total population
PMH : Number of population per medical service person
$\bar{D}r$: Average attrition rate in PMH
t : Time
b : Base year

B. Projected Manpower Demand

1) Major Occupations

To look at the distribution of manpower among the major seven occupations, agriculture and fishery industry accounts for 35.68% in 1979 which will diminish to 26.95% in 1986 and again to 20.66% in 1991. On the other hand, those engaging in manufacturing works will rise from 29.25% in 1979 to 33.40% in 1986 and 34.09% in 1991. During the period 1979-1991, the number of professionals and engineers will rise from 687, 400 to 1,555,600 and administrative managerial workers from 168,700 to 418,300; and clerks from 1,217,100 to 2,225,700. These occupations show an increase of 3.40%, 1.04% and 3.15% resprectively. The changing pattern of composition ratio among the major occupations is illustrated by Table III-2.

Table III-2. Distribution of Manpower Demand Among Major Occupations

Unit: Thousand

Occupations	1979	1981	1986	1991	Average increase per year	
					'82–'86	'87–'91
Total	13,663.9 (100.0)	14,298.9 (100.0)	16,714.0 (100.0)	18,454.0 (100.0)	3.17	2.00
Professional/Engineers	687.4 (5.03)	735.5 (5.14)	1,121.2 (6.71)	1,555.6 (8.43)	8.80	6.77
Adm./managerial	168.7 (1.23)	185.2 (1.30)	254.5 (1.52)	418.3 (2.27)	6.56	10.45
Clerical	1,217.1 (8.91)	1,308.2 (9.15)	1,777.0 (10.63)	2,225.7 (12.06)	6.32	4.61
Sales	1,728.8 (12.65)	1,807.1 (12.64)	2,101.6 (12.64)	2,517.6 (13.62)	3.06	3.65
Service	990.8 (7.25)	1,021.7 (7.15)	1,368.4 (8.19)	1,636.8 (8.87)	6.02	3.65
Agr. & fishery	4,875.1 (35.68)	4,883.2 (34.15)	4,504.0 (26.95)	3,813.0 (20.66)	-1.62	-3.39
Productive	3,996.0 (29.25)	4,358.0 (30.47)	5,587.3 (33.40)	6,291.0 (34.09)	5.09	2.40

Note The figures in parenthesize are composition ratios.

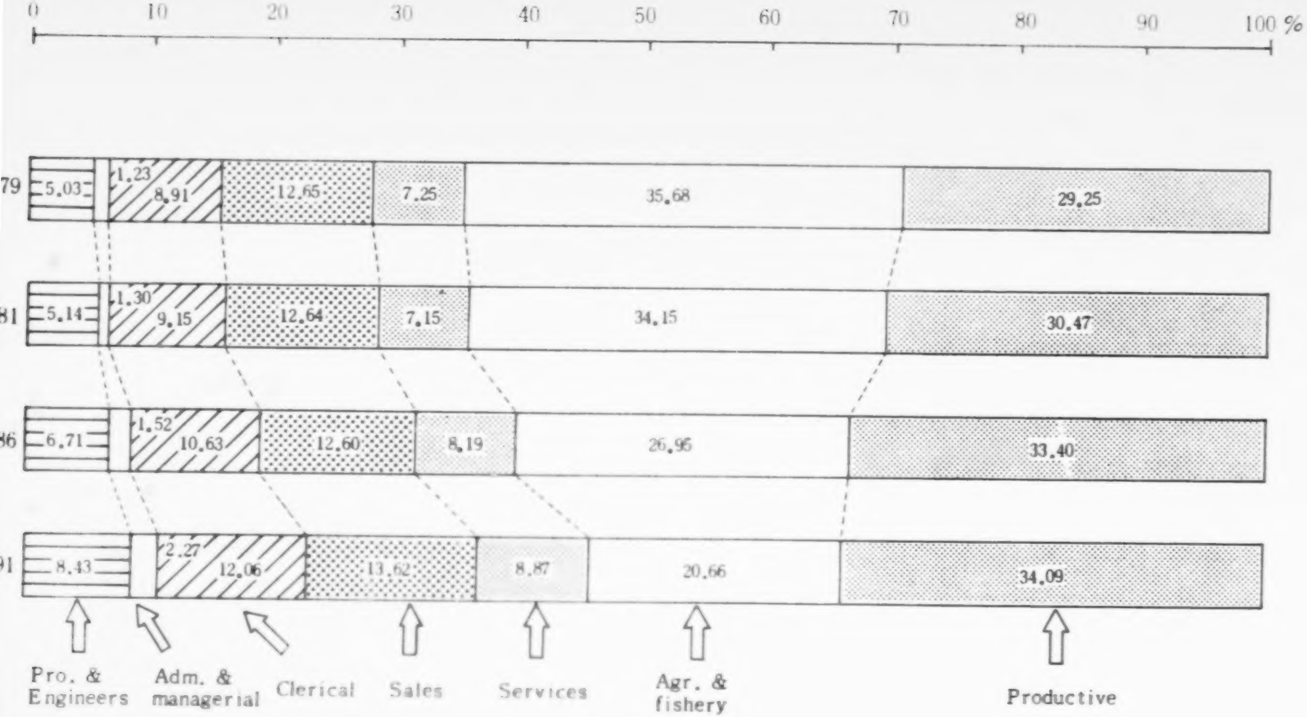

Diagram III-3. Change of Employment Composition among Occupations.

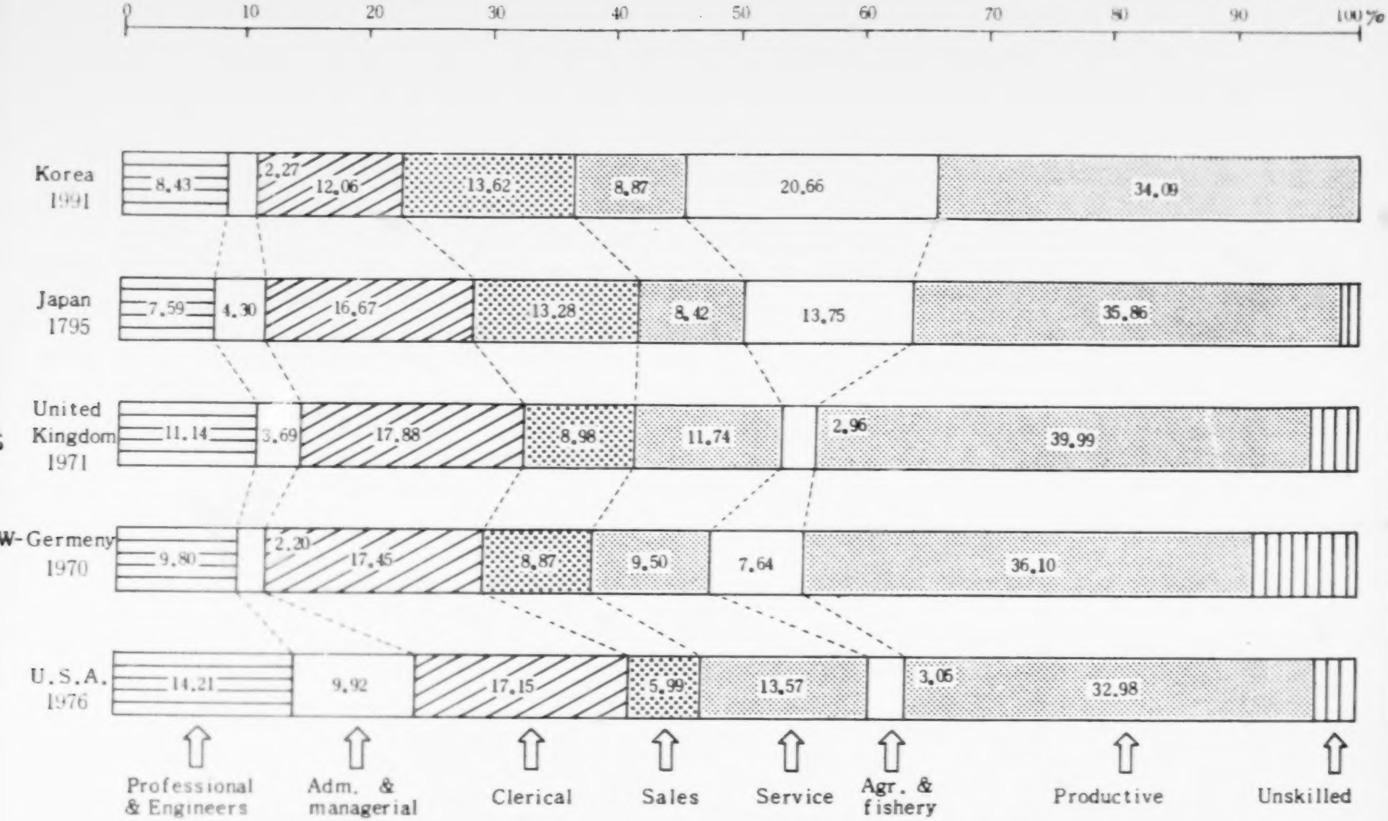

Diagram III-4. **International Comparison of Employment Composition among major Occupations.**

The increasing rate of manpower demand differs between the five year economic development plans. The averge increasing rate per year is 3.17% during the fifth plan (1982-86) and 2.00% during the sixth plan. Distinguishing among occupations, administrative and managerial works and sales record a higher increasing rate in the sixth plan. In the other occupations, the fifth plan shows higher increasing rate.

The distribution of manpower is compared among different countries. Diagram III-4 shows the across-occupation distribution of manpower of Korea projected for 1991, which resemble the 1975's distribution in Japan. The proportion of professional and technical works in Korea show an increase of 0.84% over that of Japan, while that of administrative and managerial workers is 2.03% lower. The high-level manpower which comprises these two occupations occupy 10.70% in Korea, comparable to 11.89% in Japan. This proportion is 14.83% in England, 12.00% in West Germany and 24.13% in the United States. In clerical works, the highest proportion was registered in Korea (12.06%) and England (17.88%). Korea shows the highest proportion in sales works (13.62%). It is worthy of attention that agriculture and fishery field in Korea still maintain a larger proportion (20.66%) than other countries by 1991. The proportion of manufacturing workers differs little among the countries; 34.09% in Korea, 35.86% in Japan, 39.99% in England, 36.10% in West Germany and 32.98% in the United States. The projected manpower demand is compared among years on table 3–6. The general trend is that the proportion of primary industry diminishes in reverse to the increasing proportions of mining, manufacturing, social overhead capital and service industries.

2) Professional and Technical Workers

By professional and technical workers are meant the people who are engaged in technical, economic and social activities that require expertise and a high degree of competancy for performance. They broke down into scientists, engineers, pilots/navigators of air craft and ship, medical doctors, para-medical persons, accountants, teachers and related workers.

Table III-3. Manpower Demand by Industry and Occupation (1979)

Unit: Thousand

Occupation	Total	Agr/ fishery	Mining & Manuf.			Social overhead	Service/ others
			Sub-Total	Mining	Manf.		
Total	13,663.9	4,887.0	3,237.0	111.0	3,126.0	1,510.6	4,029.3
Professional/ Technical	687.4	3.5	117.9	4.2	113.7	76.6	489.4
Adm./Managerial	168.7	1.1	78.9	2.5	76.4	37.2	51.5
Clerical	1,217.1	4.0	395.9	6.5	398.4	207.4	609.8
Sales	1,728.8	1.4	87.3	0.3	87.0	9.6	1,630.5
Service	990.8	1.1	55.5	1.0	54.5	28.0	906.2
Agr./fishery	4,875.1	4,857.6	9.9	8.7	1.2	1.5	6.1
Productive	3,996.0	18.3	2,491.6	87.8	2,403.5	1,150.3	335.8

Table III-4. Manpower Demand by Industry and Occupation (1981)

Unit: Thousand

Occupation	Total	Agr./ fishery	Mining & Manuf.			Social overhead	Service/ others
			Sub-Total	Mining	Manuf.		
Total	14,298.9	4,896.0	3,552.6	117.6	3,435.0	1,652.2	4,198.1
Professional/ Technical	735.5	3.9	132.8	4.4	128.4	86.6	512.2
Admin./Managerial	185.2	1.3	87.7	2.7	85.0	42.8	53.4
Clerical	1,308.2	4.4	442.2	7.1	435.1	215.3	646.3
Sales	1,807.1	1.6	98.2	0.3	98.6	10.6	1,696.1
Service	1,021.7	1.2	64.2	1.0	63.2	32.9	923.4
Agr./fishery	4,883.2	4,864.0	10.8	9.4	1.4	1.5	6.9
Productive	4,358.0	19.6	2,716.0	92.7	2,623.3	1,262.6	359.8

Table III-5. Manpower Demand by Industry and Occupation (1986)

Unit: Thousand

Occupation	Total	Agr./ fishery	Min. & Manuf.			Social overhead	Service/ others
			Sub-Total	Mining	Manuf.		
Total	16,714.0	4,515.0	4,287.3	129.5	4,157.8	2,275.0	5,636.7
Professional/ Technical	1,121.2	4.6	172.8	4.7	168.1	128.4	815.4
Admin./Managerial	254.5	1.7	110.0	3.2	106.5	63.1	79.7
Clerical	1,777.0	5.2	552.5	8.5	544.0	243.2	976.1
Sales	2,101.6	1.9	127.2	0.3	126.9	14.4	1,958.1
Agr./fishery	4,504.0	4,478.9	12.9	11.1	1.8	1.6	10.6
Productive	5,587.3	21.3	3,223.5	101.0	3,122.5	1,773.9	568.6

Table III-6. Manpower Demand by Industry and Occupation (1991)

Unit: Thousand

Occupation	Total	Agr./ fishery	Min. & Manuf.			Social overhead	Service/ others
			Sub-Total	Mining	Manuf.		
Total	18,454.0	3,822.0	5,100.5	140.0	4,960.5	3,203.7	6,273.8
Professional/ Technical	1,555.6	4.6	206.5	5.5	201.0	343.8	1,000.7
Admin./Managerial	418.3	2.2	124.9	3.2	121.7	181.6	109.6
Clerical	2,225.7	5.2	679.2	9.1	670.1	437.3	1,104.0
Sales	2,513.6	1.8	193.8	0.4	193.4	29.6	2,288.4
Serice	1,636.8	1.4	304.0	1.6	303.2	98.7	1,231.9
Agr./fishery	3,813.0	3,786.6	13.0	11.0	2.0	1.6	11.8
Productive	6,291.0	20.2	3,578.3	109.3	3,469.1	2,111.1	581.4

Table III-7. Change of Manpower Demand in Professional and Technical Workers

Unit: Thousand

Occupations	1979	1981	1986	1991	Average increases per year	
					1982-86	1987-91
Total	687.4 (100.0)	735.5 (100.0)	1,121.8 (100.0)	1,555.6 (100.0)	8.80	6.77
Scientists	3.7 (0.54)	4.0	4.6 (0.59)	8.3 (0.53)	10.53	4.69
Engineers/Technicians	180.8 (26.30)	203.2 (27.63)	279.6 (24.94)	440.7 (28.33)	6.59	9.53
Pilot/navigators	21.0 (3.05)	23.0 (3.13)	26.3 (2.34)	67.3 (27.80)	2.71	20.67
Medical dr./paramedical persons	149.6 (21.76)	467.2 (22.73)	307.0 (27.38)	432.5 (27.80)	12.92	7.10
Accountants	3.3 (0.48)	4.1 (0.56)	8.6 (0.77)	13.4 (0.86)	15.97	9.27
Teachers	247.3 (35.98)	255.0 (34.67)	399.8 (35.61)	467.6 (30.06)	9.38	3.21
Others	81.7 (11.89)	79.0 (15.71)	93.8 (8.37)	125.8 (8.09)	3.49	6.05

The number of professional and technical workers totals 687,000 in 1979 and this increases at the average rate of 8.80 per year during the fifth economic development plan to reach 1,121,000 in 1986.

The sixth economic development plan sees the average increase of 6.77% per year, which will bring the total number to 1,556,000 in 1991. Among the occupations under this category, teachers form the largest proportion: 35.98% in 1979 and 30.06% in 1991. Forming the second largest proportion is engineers and technicians. It rises from 180,000(26.30%) in 1979 to 440,000(28.33%) in 1991. Although scientists include only those working for national and public institutes and non-profit organizations, they number 3,700 in 1979 and 8,300 in 1991, showing 2.24-fold increase. Pilots and navigators number 26,000 in 1979 and 26,300 in 1986. 1991 sees 67,300 scientisits demanded, 3.2 times as many as the 1986's. The number of medical doctors and para-medical persons rises from 149,600 in 1979 (21.76%) to 432,500(27.80%) in 1991.

Table III-8. Demand for Professional and Technical Workers (1979)

Unit: Thousand

Occupations	Total	Agr./fishery	Mining & Manuf.			Social overhead capital	Others
			Sub-Total	Mining	Manuf.		
Total	687.4	3.5	117.9	4.2	113.7	76.6	489.4
Scientists	3.8	-	-	-	-	-	3.8
Engineers/Technicians	180.8	0.9	128.7	4.0	104.7	53.9	17.3
Pilots/Navigators	21.0	2.2	0.7	-	0.7	17.6	0.5
Medical doctors/Para-medical pers.	149.0	-	1.5	-	1.5	0.1	148.0
Accountants	3.3	-	0.4	-	0.4	0.1	2.8
Teachers	247.3	-	-	-	-	-	247.3
Others	81.6	0.4	89.4	8.2	6.4	4.9	69.7

Table III-9 Demand for Professional and Technical Workers (1981)

Unit: Thousand

Occupations	Total	Agr./ fishery	Mining & Manuf.			Social overhead capital	Others
			Sub-total	Mining	Manuf.		
Total	735.5	3.9	132.8	4.4	128.4	86.6	512.2
Scientists	4.0	–	–	–	–	–	4.0
Engineers/Technicians	203.2	1.1	124.7	4.2	120.5	59.2	18.2
Pilots/navigators	23.0	2.2	0.8	–	0.8	19.6	0.4
Medical doctors/ para-medical pers.	167.2	–	1.5	–	1.5	0.2	165.5
Accountants	4.1	–	0.3	–	0.3	0.1	3.7
Teachers	255.0	–	–	–	–	–	255.0
Others	79.0	0.6	5.5	0.2	5.3	7.5	65.4

Table III-10 Demand for Professional and Technical Workers (1986)

Unit: Thousand

Occupations	Total	Agr./ fishery	Mining & Manuf.			Social overhead capital	Others
			Sub-total	Mining	Manuf.		
Total	1,121.2	4.6	172.8	4.7	168.1	128.4	815.4
Scientists	6.6	–	–	–	–	–	6.6
Eng. tech.	279.6	1.8	157.2	4.4	162.8	86.5	24.1
Pilots/navigators	26.4	1.7	1.0	–	1.0	0.4	23.3
Medical doctors/ para-med. pers	307.0	0.1	1.5	0.1	1.4	0.5	304.9
Accountants	8.6	–	0.2		0.2	0.1	8.3
Teachers	399.3	–	–	–	–	–	399.3
Others	93.7	1.0	2.9	0.2	2.7	40.9	48.9

Table III-11 Demand for Professional and Technical Workers (1991)

Unit: Thousand

Occupations	Total	Agr./ fishery	Mining & Manuf.			Socal overhead capital	Others
			Sub-total	Mining	Manuf.		
Total	1,555.6	4.6	206.5	5.5	201.0	343.8	1,000.7
Scientists	8.3	–	–	–	–	–	8.3
Eng./tech.	440.7	2.2	203.8	5.0	198.8	205.0	29.7
Pilots/navigators	67.4	0.7	0.8	–	0.8	64.9	1.0
Medical doctors/ para-med. pers.	432.5	–	1.4	0.1	1.3	1.9	429.2
Accountants	13.4	–	–	–	–	–	13.4
Teachers	467.6	–	–	–	–	–	467.6
Others	125.7	1.7	0.5	0.4	0.1	72.0	51.5

Overviewing the aforegoing tables, social overhead capital and service industry each occupy the largest proportion of total demand. Those engaging in service industry number 48,900 (71.20%) in 1979 and 1,000,000 (64.53%) in 1991. In terms of the absolute number, social overhead capital shows the largest increase–from 76,600 in 1979 to 343,800 in 1991, 4.5-fold increase.

3) Science and Technical Manpower

Science and technical manpower include scientists, engineers (including technicians) and craftsmen, each of them being defined as follows:

Scientists: Researchers working for national and public institutes and faculties of colleges and universities (above full-time lecturers) and junior colleges (above associate professors) with major in natural science.

Engineers: Those with bachelor's degree in engineering or equivalent qualifications, able to plan, design, conduct research and development, supervise with responsibility and promote sales which require technical expertise. Equivalent qualification is established when a graduate of junior vocational college is certified as possessing this competency through actual experience.

Craftsmen: The graduates of technical high schools or general high schools with one year of technical experience or more, able to manufacture, operate, repair machinery products and supervise or guide with responsibility simple workers.

(1) Total Demand

According to Table III-12, the required number of science and technical manpower is 641,000 in 1979, 1,044,000 in 1986, and 1,402,000 in 1991. Their composition rations to total demand in all occupations are 4.49%, 6.24% and 7.60% respectively. The average percentage increase per year is 7.23% from 1982 to '86 and 6.08% from 1987 to '91.

The percentage of craftsmen to total demand is largest; it rises from 444,000 (3.25%) in 1979 to 878,000 (4.76%), showing an increase of 1.51%. Following this is the proportion of engineers; it rises from 181,000 (1.32%) in 1979 to 441,000 (2.39%) in 1991. The average percentage increase per year is 6.59% from 1982 to '86 and 9.53% from 1987 to '91. The increase in this demand accelerates in the late 1980's. The proportion of scientists increases from 0.12% in 1979 to 0.45% in 1991, showing an increase of 0.33%.

Among others, the demand for science and technical manpower is largest in manufacturing industry. Its percentage to total demand in manufacturing industry is 12.88% in 1979 and 16.60% in 1991. The proportion of engineers to total demand is 3.35% in 1979 and 4.00% in 1991. Distinguishing between light and heavy/chemical industry, the distribution of engineers is biased for the latter. Heavy/chemical industry intake 81.47% of engineers in 1979 and this rises by 11.23% to reach 92.70% in 1991.

The percentage of craftsmen to total manpower demand of manufacturing industry rises from 9.53% in 1979 to 12.60% in 1991. Distinguishing between light and heavy/chemical industry, 79.39% of craftsmen are employed by the latter in 1979.

Table III-12 Demand for Science and Technical Manpower

Unit: Thousand

Occupations	1979	1981	1986	1991	Average increase per annum	
					1982-'86	1987-'91
Total demand	13,663.9	14,298.8	16,714.0	18,454.0	3.17	2.00
	(100.0)	(100.0)	(100.0)	(100.0)		
Scien. & technical	641.2	736.1	1,043.6	1,401.8	7.23	6.08
	(4.69)	(5.15)	(6.24)	(7.60)		
Scientists	16.8	21.9	42.7	43.0	14.28	14.22
	(0.12)	(0.15)	(0.26)	(0.45)		
Engineers	180.8	203.2	279.6	440.7	6.59	9.53
	(1.32)	(1.42)	(1.67)	(2.39)		
Craftsmen	443.6	511.0	721.3	878.1	7.14	3.98
	(3.25)	(3.57)	(4.31)	(4.76)		

Table III-13 Demand for Science and Technical Manpower

(Manufacturing Industry)

Unit: Thousand

Occupation	1979	1981	1986	1991
Manufacturing industry	3,126.0	3,435.0	4,157.8	4,960.5
	(100.0)	(100.0)	(100.0)	(100.0)
Light ind.	1,649.2	1,741.8	1,952.9	2,337.8
	(52.75)	(50.70)	(46.97)	(47.13)
Heavy/chem.	1,476.8	1,693.2	2,204.9	2,662.7
	(47.25)	(49.30)	(53.13)	(52.87)
Science/techn. manpower	402.7	473.4	657.3	823.6
	(12.88)	(13.78)	(15.81)	(16.60)
Engineers	104.7	120.5	162.8	198.8
	(3.35)	(3.51)	(3.92)	(4.00)
Light ind.	19.4	18.5	17.0	14.5
	(0.62)	(0.54)	(0.41)	(0.29)
Heavy/chemical	85.3	102.0	145.8	184.3
	(2.73)	(2.97)	(3.51)	(3.71)
Craftsmen	298.0	352.9	494.5	624.8
	(9.53)	(10.27)	(11.89)	(12.60)
Light ind.	61.4	66.7	78.9	86.5
	(1.96)	(1.94)	(1.90)	(1.74)
Heavy/chemical	236.6	286.2	415.6	538.8
	(7.57)	(8.33)	(9.99)	(10.86)

This increase to 86.23% in 1991. Heavy/chamical industry intake a larger proportion of craftsmen, somewhat resembling the distribution pattern of engineers.

(2) Engineers (Including Technicians)

Table III-14 shows the distribution of engineers(including technicians) among major occupations of industry. Total demand of engineers is estimated at 180,000 in 1979. Of this, mechanical engineers number 57,000, accounting for 31.76%. Those in archetecture and civil engineering number 45,000, accounting for 24,895. In 1991, the percentage of other engineers looms largest(22.15%), followed by mechanical engineers(20.10%), which diminishes by 11.66% below the 1979's level. In terms of absolute number, the largest increase is recorded in electrical and electronic engineers- from 25,500 in 1979 to 79,400 in 1991, 3.1-fold increase, followed by civil engineering and architectural engineers which register 1.96-fold increase.

Compared with Japan, the 1979's demand of engineers in Korea is smaller than the 1975's demand in Japan. But it is expected to surpass Japan by 1991. The percentage of engineers(including technicians) to total demand is 1.32% in 1979 and this is expected to rise to 2.39% by 1991 in Korea. Its 1975's percentage in Japan is 1.42%, 0.1% higher than the 1979's level and 0.97% lower than the 1991's level in Korea. The number of engineers for 1,000 people in Korea is 4.81% in 1979 and 9.74% in 1991 against the Japan's 6.72% in 1975.

Table III-14 Demand for Engineers

Unit: Thousand

Occupations	1979	1981	1986	1991
Engineers	180,839 (100.0)	203,168 (100.0)	279,589 (100.0)	440,680 (100.0)
Mining	3,085 (1.70)	3,145 (1.55)	3,268 (1.17)	3,654 (0.83)
Metal	10,228 (6,65)	11,624 (5.72)	14,516 (5.19)	15,620 (3.54)
Machinery	47,426 (31.76)	63,581 (31.29)	76,925 (27.51)	88,596 (20.10)
Electricity/electronic	25,529 (14.12)	30,490 (15.00)	47,141 16.86)	79,411 (18.02)
Chemical	11,803 (6.52)	13,220 (6.51)	18,020 (6.45)	23,325 (5.29)
Civileng./Archit.	45,012 (24.89)	46,075 (22.68)	55,131 (19.72)	88,455 (20.07)
Others	27,756 (15,35)	35,033 (17.25)	64,588 (23.10)	14,619 (32.15)

(3) Craftsmen

Out of 28 occupations, nine were selected for their relation with heavy and chemical industry. Education level–high school and above-served as the criterion for determining the proportion of craftsmen to total demand of nine occupations. The 1975's census was used as baseline data. Assuming that the proportion of craftsmen will increase with the advance of technology, target demands were set for 1991 in reference to the 1970's indices of Japan. The number of craftsmen increases from 443,500 in 1979 to 876,900 in 1991. To look at the 1991's demand among occupations, the largest demand is recored in machinery fitters (184,500), followed by electric and electronic fitters (152,800), black smiths and hammer smiths (145,500), construction workers (127,900) and plumbers welders (58,800). The largest annual increase is shown in black smiths and hammer smiths (9.64%).

Table III-15 Demand for Craftsmen

Unit: Thousand

Occupations	1979(1975)	1981	1986	1991(1970)
Craftsmen	443.5	511.0	721.4	876.9
Metal Processors	24.8(24.6)	30.1	41.5	48.2(33.3)
Chemical Processors	26.4(28.3)	31.0	44.1	57.0(51.3)
Blachsmiths	48.3(10.10)	51.3	57.1	58.8(20.5)
Spinners, Weavers	48.2(22.2)	61.3	100.9	145.5(27.5)
Machinery fitters	83.8(30.3)	99.0	150.9	184.5(42.1)
Select. & electronic fitters	83.5(38.5)	96.3	130.2	152.8(52.4)
Plumbers, welders	26.8(23.2)	31.5	45.3	58.8(23.7)
Const. workers	87.4(14.2)	92.4	119.6	127.9(18.2)
Machine operators	14.3(35.5)	18.1	31.8	44.5(35.1)

Note: 1) Percentage of craftsmen with high school education and above derived from the 1975's census

2) Percentage of craftsmen with high school education and above in 1970 in Japan, which is targeted for Korea in 1991.

4) Manpower in Special Areas

(1) Teachers

The teacher has a broad connotation covering all school levels, from kindergarten to college. Since this study is intended to assess the demand of teachers in formal school systems as related to manpower development, kindergarten teachers were excluded from demand projection. There are many different ways to project the demand of teachers, but this projection was based on the number of pupils per teacher.

According to Table III-16, total number of teachers in 1979 is projected at 230,000 which is expected to reach 467,000 in 1991, showing a two fold increase. Comparing increase in the number of teachers among school levels, the number of primary school teachers shows 1.5-fold increase which brings total number to 179,000 by 1991. Middle school teachers increase by 2.1 times and high school teachers by 2.65 times, bringing total number to 112,000 and 122,000 respectively. The faculties of junior vocational colleges and universities will number 13,800 and 40,800, showing 3.16-fold and 3.74-fold increase respectively. In terms of percentage, the number of faculties on the tertiary level records the most rapid increase over the period 1979-1991.

Table III-16 Projected Demand of Teachers by School Level

School levels	1979	1981	1986	1991
Total	230,551	262,879	364,264	467,635
Primary school	117,089	126,131	154,182	179,304
Middle school	52,429	61,079	93,777	112,161
High school	45,735	53,611	78,665	121,503
Jr. voc. col.	4,378	6,817	10,446	13,842
	(1,797)	(2,571)	(3,188)	(3,418)
Universities	10,920	15,241	27,194	40,825
	(5,195)	(7,122)	(12,153)	(17,448)

Note: The figures in Parentheses are the number of professors, for Universities: including full-time lectures in Science & Engineering Colleges, for Junior Vocational Colleges: excluding full-time lecturers in Science & Engineering Junior Vocational Colleges.

To look at increase in the percentage of teachers on each school level, university faculties account for 8.74% of total teachers in 1991, showing an increase of 3.98% over the 1979's, while primary school teachers account for 38.34%, showing a decrease of 12.44%. The percentage of middle school teachers increases by 1.24% to reach 23.98% and that of high school by 6.15% to reach 25.98%. The higher rate of increase registered on the secondary level than at primary school reflects the educational policy set in the direction of making middle school education compulsory and effecting a regionally balanced development of high school education. The highest increasing rate on the tertiary level is indicative of heightening policy concern for enlarged opportunity for an the quality of higher education.

(2) Medical Doctors and Para-medical Persons

In the projection of demand for medical doctors and paramedical persons, reference was made to the number of population per medical doctor in a country whose per capital income is equivalent to the projected one for Korea in 1991. A country with the per capita income of $3,452 was selected as the closest approximation to the Korea's target of $3,200 set for 1991.

Table III-17 Number of Population per Medical Person

Nations	Years	Per capita income (U.S.$)	Medical doctors	Dentists	Pharmacists	Nurses
Average		3,452	468	2,399	1,860	268
England	1974	3,497	400	3,217	2,293	243
Italy	1974	2,818	490	–	1,450	330
Japan	1973	3,836	870	2,740	1,510	330
Checko.	1974	3,240	430	2,360	2,470	170
Israel	1973	3,569	350	1,280	1,570	–

The number of population per medical person in a country with the per capita income of $3,452 is 568 for a medical doctor, 2,399 for a dentists, 1,860 for a pharmacist, and 268 for a nurse. These numbers served as the base for the projection of medical persons for 1991.

Table III-18 Number of Population Per Medical Person

Occupations	1978	1981	1986	1991
Medical doctor	1,614	1,268	848	568
Dentist	11,934	8,241	4,446	2,399
Pharmacist	1,655	1,700	1,778	1,860
Nurses	1,099	793	461	268
Others	638	544	417	320

Source: Ministry of Health and Social Welfare, *Statistical Yearbook of Health and Social Welfare*, 1979.

Among the medical and related occupations, the largest number of population is recorded in dentists. This means the least demand of dentists. The remaining comes in the order of pharmacists, medical doctors and nurses. The 1978's number of population per medical doctor is 1,614 which drops to 568 by 1991 and that of dentists from 11,934 to 2,399. By contrast, the number of population per pharmacist increases from 1,655 to 1,860, suggesting that the demand of pharmacists projected for 1979 is relatively high, compared with those of advanced countries. On this basis, demand projection was made, as shown by Table III-19.

Table III-19 Demand for Medical Manpower

Unit: Thousand

Occupations	1979	1981	1986	1991
Total	149.6 (100.0)	167.2 (100.0)	307.0 (100.0)	432.9 (100.0)
Med. doctors	27.3 (18.25)	30.7 (18.36)	57.9 (18.79)	79.7 (18.43)
Dentists	4.3 (2.87)	5.2 (3.11)	11.7 (3.81)	18.8 (4.35)
Pharmacists	23.0 (15.37)	22.6 (13.52)	24.7 (8.04)	24.3 (5.62)
Nurses	39.0 (26.06)	47.1 (28.17)	105.0 (34.20)	168.6 (38.98)
Others	56.0 (37.45)	61.6 (36.84)	107.9 (35.16)	141.1 (32.62)

Among occupations related to medical services, the largest demand of manpower is recorded in "others". The demand of nurses is projected at 39,000 for 1979 (26.06%), that of medical doctors at 27,300 (18.25%), and that of pharmacists at 23,000 (15.37%). The demand of dentists is the least one (4,300), accounting for 2.87%.

In 1991, the percentage of nurses will be the largest one (38.98%), followed by medical doctors (18.43%). The numbers of dentists and pharmacists are 18,800 and 24,300, accounting for 4.35% and 5.62% respectively. The proportion of pharmacists diminishes by 9.75% to 5.62%. Total demand of medical manpower increases from 149,600 in 1979 to 432,500 in 1991, showing an 2.89-fold increase.

3. Additional Manpower Requirement

A. *Projection Model*

Additional manpower requirement refers to an increased demand of manpower in an occupation plus attrition. The formula of projection reads:

$$AR_j^t = I_j^t + A_j^t \text{ - - - - - - - - - - - - - - - - - - Formula 6}$$

$$(I_j^t = D_j^{t+1} - D_j^t$$

AR : Additional manpower requirement
I : Increased demand
A : Attrition
D : Manpower demand
j : Occupation
t : Year

For example, let's assume that manpower demand has been projected as shown in Table III-20 in "j" occupation with attrition rate of 2% per year. Its additional manpower requirement will be projected as follows:

The increased demand is obtained by deducting the 1980's total demand from the 1981's. Deducting 100 from 150 gives 50. 2% of the 1980's total demand is 2 and the sum of increased demand and attrition is 52. The yearly attrition rate is projected in the following way which takes in account variation factors related to age, sex and the percentage of economically ative population.

Table III-20 Projection of Additional Manpower Requirement

Description	1980	1981	1982	1983
Total demand	100	150	170	200
Increased demand		50	20	30
Attrition		2	3	3.4
Add. req't		52	23	33.4

$$Aj = \frac{\sum_{i=1}^{11} (E \, . \, A_2')_i + \sum_{i=1}^{11} (E . \, A_2'')_i}{\sum_{i=1}^{11} E_{ji}} / 5 \text{ - - - - - - - - } \text{Formula 7}$$

A : Average attrition rate per year

A' : Attrition rate of male

A'' : Attrition rate of Female

A_1 : Attrition rate of farmers

A_2 : Attrition rate of non-farmers

E : The number of employed people by age group

i : Age groups (11 groups)

j : Occupation

5 : Ages within an age group

In agriculture and fishery industry (j=6), A_2' and A_2'' in the aforegoing formula are substituted by A_1' and A_1'' and A_1', A_1'', A_2', A_2'' are projected through the following.

$$A_i = \frac{HP_i - HP_{i+1}}{HPi} \text{ - - - - - - - - - - - - - - - - } \text{Formula 8}$$

$$HP = Hs \, . \, R \text{ - } \text{Formula 9}$$

Hs : The number of survivors (assumed)

R : The percentage of economically active population

Then, $A_{2\,i}'$ is calculated as follows.

$$A_{2i}' = \frac{(Hs \cdot R_2')\, i - (Hs \cdot R_2')_{i+1}}{(Hs \cdot R_2')_i} \text{ - - - - - - - - - - - - } \text{Formula 10}$$

R_2' : Percentage of economically active population (Non-farming male)

Table III-21 Attrition Rate by Age Group (Male)

Age Groups	Farmers			Non-Farmers		
	Available Manpower	E.A.P.	Attrition Rate	Percent of E.A.P.	E.A.P.	Attrition Rate
20 – 24	90,967	84,052 (89.1)	–	75.3	68,498	–
25 – 29	89,816	85,325 (95.0)	0.69	95.4	85,684	–
30 – 34	88,636	84,737 (95.6)	0.65	98.6	87,573	1.48
35 – 39	57,329	84,185 (96.4)	3.24	98.0	86.281	4.66
40 – 44	85,695	82,010 (95.7)	2.88	97.5	83,553	4.57
45 – 49	83,490	79,649 (95.4)	6.43	91.5	79,732	10.76
50 – 54	80,394	74,525 (92.7)	8:21	88.5	71,149	21.85
55 – 59	75,962	67,986 (89.5)	22.42	73.2	55,604	43.11
60 – 64	69,674	52,743 (75.7)	26.72	45.4	31,632	48.69
65 – 69	61,014	38,622 (63.3)	65.33	26.6	16,230	68.71
70 –	49,784	13,392 (26.9)	–	10.2	5,078	–

Note: Figures in paranthesis are percentage.

Table III-22 Attrition Rate by Age Group (Female)

Age Groups	Farmers			Non-Farmers		
	Available Manpower	E.A.P.	Attrition Rate	Percent of E.A.P.	E.A.P.	Attrition Rate
20 – 24	92,654	56,704 (61.2)	–	51.4	47,624	47.10
25 – 29	91,787	51,768 (56,4)	–	27.5	25,241	–
30 – 34	90,780	61,730 (68.0)	–	32.2	29,231	–
35 – 39	89,590	67,999 (75.9)	1.46	41.4	37,090	–
40 – 44	88,166	67,006 (76.0)	4.36	42.7	37,647	–
45 – 49	86,371	64,087 (74.2)	8.2	4.2	38,176	15.98
50 – 54	83,963	58,774 (70.0)	10.17	38.2	32,074	26.87
55 – 59	80,606	52,797 (65.5)	29.10	29.1	23,456	45.62
60 – 64	75,930	37,433 (49.3)	39.40	16.8	12,756	52.29
65 – 69	65,159	22,684 (32.8)	78.02	8.8	6,086	65.81
70 –	59,443	4,993 (8.4)	–	3.5	2,081	–

Table III-23 Average Annual Attrition Rate by Occupation

Occupations	Attrition Rate
Professional/Technical	2.00
Administrative/Managerial	2.55
Clerical	1.95
Sales	1.98
Service	2.14
Agri./Fishery	1.62
Manufacturing	1.44

B. Projected Additional Manpower Requirement

The additional manpower requirement given below is limited to occupations included in the plan for the demand for and supply of manpower.

1) Professional and Technical Workers

Table IV-24 shows the additional requirements of professional and technical workers. In 1979, professional and technical works require a total of 81,318 manpower, the requirement drops to 75,871 in 1980 and 1981. From 1980 to 1991, a total of 1,108,829 are required. Distinguishing between the fifth and the sixth economic development plans, 473,400 are required for the former and 559,500 for the latter, showing the yearly increment of 94,700 and 111,900 respectively.

Table III-24 Additional Requirement of Professional and Technical Workers

Descriptions	1978	1979	1981	1986	1991
Total demand	618,460	687,409	735,492	1,121,166	1,555,592
Increased demand		68,949	48.083	385,674	434,426
Attrition 1)		12,369	27,788	87,745	125,113
Additional requirement 2)		81,318	75.871	549.290	1,108,829

Note: 1) 1981's attrition is the sum of 1979's and 1980's. 1986's attrition is the sum of those in five years from 1981 to 1985.

2) Additional requirement for each year after 1980 is the sum of those over years preceding it.

It is necessary to breakdown additional requirement into minor occupations. Table III-25 shows the additional requirement of scientists.

Table III-25 Additional Requirement of Scientists

Description	1978	1979	1981	1986	1991
Total demand	14,700	16,794	21,918	42,652	83,000
Increased demand		2,094	5,124	20,734	40,348
Attrition		294	719	2,911	5,665
Add. require't		2,388	5,843	29,485	75,501

The number of scientists required for 1979 is 2,400. 29,500 are required for 1980 and 1981 and 75,500 for the period 1980-91, which necessitates the yearly increment of 6,000. The additional requirement of scientists covers national and public institutes, non-profit organizations, higher education institutes and enterprises.

Table III-26 Additional Requirement of Engineers

Description	1978	1979	1981	1986	1991
Total Demand	168,301	180,839	203,168	279,589	440,680
Increased demand		12,538	22,329	76,421	161,091
Attrition		3,366	7,355	23,240	33,103
Add. require't		15,940	29,687	129,348	323,542

1979's requirement of engineers is 15,900, 129,300 are required for the years of 1980-86 and 323,500 for years up to 1991. 99,700 are required for the fifth economic development plan and 194,200 for the sixth economic development plan, with the yearly increment of 19,900 and 38,800 respectively.

Distinguishing among minor occupations, the additional requirement of electric and electronic technicians is largest, requiring 57,100 for 13 years until 1991, with the yearly increment of 5,200. In civil engineering and architectural field, 60,400 are required for the corresponding period, with the yearly increment of 4,600. Required in mechanical field, 52,400 engineers are required, with the yearly increment of 4,000. Besides, 9,400 metal engineers and 16,300 chemical engineers are required, with the yearly increment of 730 and 1,300 respectively.

Table III-27 Additional Requirement of Metallurgic Engineers

Description	1978	1979	1981	1986	1991
Total demand	9,570	10,228	11,624	14,516	15,620
Increased demand		658	1,396	2,892	1,104
Attrition		191	417	1,283	1,500
Add. require't		849	1,813	5,988	8,592

Table III-28 Additional Requirement of Mechanical Engineers

Description	1978	1979	1981	1986	1991
Total demand	54,752	57,426	63,581	76,925	88,596
Increased demand		2,674	6,155	13,344	11,671
Attrition		1,095	2,331	6,966	8,115
Add. require't		3,769	8,486	28,796	48,582

Table III-29. Additional Requirement of Electrical and Electronic Engineers

Description	1978	1979	1981	1986	1991
Total demand	23,218	25,529	30,490	47,141	79,411
Increaded demand		2,311	4,961	16,651	32,270
Attrition		464	1,056	3 672	5,720
Add. require't		2,775	6,017	26,340	64,360

Table III-30 Additional Requirement of Chemical Engineers

Description	1978	1979	1981	1986	1991
Total demand	11,216	11,803	13,220	18,020	23,325
Increased demand		587	1,417	4,800	5,305
Attrition		224	479	1,500	1,998
Add. require't		811	1,896	8,196	15,499

Table III-31 Additional Requirement of Civil and Architectural Engineers

Description	1978	1979	1981	1986	1991
Total demand	42,071	45,012	46,075	55,131	88,455
Increase demand		2,841	1,063	9,056	33,324
Attrition		841	1,783	4,796	6,554
Add. require't		3,782	2,846	16,692	56,570

Table III-32 Additional Requirement of Mining Engineers

Description	1978	1979	1981	1986	1991
Total demand	3,018	3,085	3,145	3,268	3,654
Increased demand		67	69	123	386
Attrition		60	123	318	335
Add. require't		127	192	633	1,354

Table III-33 Additional Requirement of Other Engineers

Description	1978	1979	1981	1986	1991
Total demand	24,456	27,756	35,033	64,588	141,619
Increased demand		3,300	7,727	29,555	77,031
Attrition		489	1,164	4 561	8,836
Add. require't		3,789	8,891	43,007	128,874

2) Administrative and Managerial Workers

Included in this category are employees of the government and National Assembly and Managers of enterprises. The additional requirement of administrative and managerial workers is shown in Table III-34.

Table III-34 Additional Requirement of Administrative and Managerial Workers

Description	1978	1979	1981	1986	1991
Total demand	158,058	168,737	185,254	254,463	418,284
Increased demand		10,679	16,517	69,209	163,821
Attrition		4,030	8,737	26,907	38,370
Add. require't		14,709	25,254	121,370	323,561

According to Table III-34, total demand of administrative and managerial workers rises from 168,700 in 1979 to 418,300 in 1991, showing 2.47-fold increase. 1979's additional requirement is 14,700. It is projected at 121,400 for 1980-84, and 323,600 for 1980-91, with the yearly increment of 19,200 during the fifth economic development plan and 40,400 during the sixth economic development plan. From 1979 to 1991, each year should see the supply of 26,000 per year to meet the additional requirement of 338,300.

3) Craftsmen

Among 28 occupations related to production, the demand of craftsmen is largest. Craftsmen are classified into nine areas, namely; metal processors, chemical processors, spinners and weavers, blacksmiths and hammersmiths, machinery fitters and assemblers, electrical fitters and electronic workers, plumbers and welders, bricklayers and construction workers, and machine operators.

Table III-35 Additional Requirement of Craftsmen

Description	1978	1979	1981	1986	1991
Total demand	406,819	443,625	511,021	721,302	869,097
Increased demand		36,806	67,396	210,281	147,795
Attrition		22,169	49,533	161,442	215,343
Add. require't		58,975	116,929	488,652	851,790

1979's additional requirement of craftsmen is 59,000, 116,900 are required for 1980-81 and 771,700 for 1982-86, the yearly increament of 74,300. From 1987 to 91,363,100 craftsmen are required, with the yearly increment of 72,600 per year. The additional requirement of craftsmen from 1979 to 1991 is 91,000 with 70,000 to be supplied each year.

Tables III-36-43 show additional requirement of craftsmen by occupational area, beginning with machinery showing the largest additional requirement, Machinery craftsmen include blacksmiths, toolsmiths, machinery bitters and assemblers. The additional requirement of machinery craftsmen is 20,000 for 1979 and 334,000 for the period 1980-91, with the yearly increment of 28,000. The second largest additional requirement is shown of electrical fitters and electronic workers; it is projected at 10,000 for 1979 and 147,000 for the period 1980-91, requiring that 12,000 be supplied each year. The remaining comes in the order of construction workers, plumbers and welders, chemical processors, equipment operators, metal processors, and spinners and weavers.

Table III-36 Additional Requirement of Machinery Craftsmen

Description	1978	1979	1981	1986	1991
Total demand	118,471	131,998	160,345	251,811	320,980
Increased demand		13,527	28,347	91,466	69,169
Attrition		6,456	14,979	53,125	77,463
Add. require't		19,983	43,326	187,917	334,549

Table III-37 Additional Requirement of Electric Fitters and Electronic Workers

Description	1978	1979	1981	1986	1991
Total demand	77,549	83,548	96,263	130,153	152,829
Increased demand		5,999	12,715	33,890	22,676
Attrition		4,226	9,345	29,917	38,273
Add. require't		10,225	22,060	85,867	146,816

Table III-38 Additional Requirement of Construction Workers

Description	1978	1979	1981	1986	1991
Total demand	79,349	86,756	92,418	119,561	127,954
Increased demand		7,407	5,662	27,143	8,393
Attrition		4,325	9,456	28,135	34,092
Add. require't		11,732	15,118	70,396	112,881

Table III-39 Additional Requirement of Plumbers and Welders

Description	1978	1979	1981	1986	1991
Total demand	26,604	26,829	31,523	45,260	58,819
Increased demand		2,225	4,694	13,737	13,559
Attrition		1,341	3,013	10,023	13,846
Add. require't		3,566	7,707	31,467	58,872

Table III-40 Additional Requirement of Chemical Processors

Description	1978	1979	1981	1986	1991
Total demand	24,594	26,447	31,027	44,103	56,973
Increased demand		1,813	4,620	13,076	12,870
Attrition		1,340	2,966	9,821	13,485
Add. require't		3,153	7,586	30,483	56,838

Table III-41 Additional Requirement of Equipment Operators

Description	1978	1979	1981	1986	1991
Total demand	12,416	14,346	18,075	31,774	44,531
Increased demand		1,930	3,729	13,699	12,757
Attrition		676	1,645	6,301	10,084
Add. require't		2,606	5,374	25,374	48,215

Table III-42 Additional Requirement of Metal Processors

Description	1978	1979	1981	1986	1991
Total demand	22,464	24,851	30,109	41,517	48,187
Increased demand		2,387	5,258	11,408	6,670
Attrition		1,224	3,818	9,476	12,211
Add. require't		3,611	8,076	28,981	47,862

Table III-43 Additional Requirement of Spinners

Description	1978	1979	1981	1986	1991
Total demand	47,372	48,280	51,261	57,123	58,824
Increased demand		908	2,981	5,862	1,701
Attrition		2,581	5,281	14,633	15,889
Add. require't		3,489	8,262	28,757	46,347

IV. DEMAND FOR AND SUPPLY OF MANPOWER

This chapter examines the sources of manpower supply in relation to projected demand and additional requirement in a long term perspective. An attempt to compare supply with demand should involve all occupations. This study concerns itself with manpower in science and technical field in view of policy orientation toward its intensive development. The planning of manpower demand and supply covers the entire period of the fifth and sixth economic development plans; the former spans from 1982 to 1986 and the latter extends thereafter up to 1991. Included in this are scientists, engineers, administrators of public agencies and managers of enterprises. The major sources of manpower related to them are graduate schools, universities, junior vocational colleges and technical high schools.

1. Planning of Manpower Demand and Supply

Planning of manpower demand and supply may be approached in various ways. The planning attempted in this study proceeded in the following steps. Additional requirement of manpower was examined in relation to the possible supply of manpower in each source of supply. The possible supply of manpower was projected by multiplying available manpower with employment rate. Comparison of additional requirement with possible supply by source provided suggestions regarding how to ensure an effective link between the two.

A. Composition of Supply Sources

Although additional requirement of manpower is related to one occupation, its source may be various. Hence, the initial step was to examine sources of the manpower in question and the possible supply of each source was considered in terms of ratio to total supply available from all concerned sources.

For example, the sources of engineers (including technicians) may be classified into engineering colleges, junior technical colleges and others. Each source is compared with others in terms of the percentage of its graduates to total supply of three sources. The obtained composition ratio means the share of each source to total additional requirement of engineers.

B. Projection of Supply Capacity

1) Available Manpower

Available manpower refer to those who intend to join labor force after schooling. The number of available manpower for high level public servants is projected by subtracting from total number of graduates for the year those bound to advanced study and military service and adding those who advanced to graduate school and were drafted to military service two years ago.

2) Employable Manpower (Supply Capacity)

Not all of the available manpower are employed in the occupation corresponding to one's area of study. Even those who have been trained for high level administrators may have to shift to other occupations against their intentions or they may not be employed at all. Therefore, employable manpower is obtained by subtracting from available manpower those unable to join labor force and acquire the occupations other than what they are intended for. Employment rate is computed for application to this projection.

3) Balance of Demand and Supply

Surplus and shortage are descrepancies between additional requirement and supply capacity of manpower sources. One occupation entails various sources of supply. This study limited itself to educational programs in the formal system.

2. Demand and Supply of High-Level Manpower

By high-level manpower are meant professional and technical workers and administrative and managerial workers. Their suppliers are graduate schools, universities, and junior colleges. Other sources of supply than these are industrial experience, on-site training, overseas training, etc. The projection of supply attempted here was limited to formal schooling at home which form the artery of highlevel manpower supply.

A. *Distribution of Additional Requirement Among Sources*

For the projection of additional requirement by source, the proportional distribution of sources for high-level manpower was determined on the basis of 1975's census and Statistical Yearbook of Education. The 1979's additional requirement is distributed among universities including colleges (42.67%) and junior vocational colleges (13.88%). But the forthcoming advent of a highly industrialized society is expected to alter the distributional structure with heavier reliance on universities and graduate schools. The share of high-level manpower to be supplied by university increases to 45.56% in 1981, 52.7% in 1986 and 60.00% in 1991, and the same trend is noticed in junior vocational colleges (including teacher's colleges). By contrast, the share of other sources declines from 43.45% in 1979 to 5.00% in 1991.

Table IV-1 Proportional Distribution of Sources for High-Level Manpower

	1979	1981	1986	1991
Univ. and Colleges	42.67	45.56	52.78	60.00
Jr. Voc. Col.	13.88	17.40	26.20	35.00
Others	43.45	37.04	21.02	5.00

B. Projection of Available Manpower

Most useful for the projection of available manpower were the 1980's quota set for entrance to college & universities and graduation quota to take effect in the future. The question of "when quota system takes effect?" is a factor for a significant variation of available manpower. Projection was made under the assumption that admission quota taking effect in 1980 and graduation quota to be effective in 1984 will remain effective until 1991.

Under this assumption, the ratio of graduates to entrants, the ratio of those bound to advanced studies and the ratio of those drafted into military service were computed for application to the projection of available manpower. An increasing trend is detected in the ratio of graduation and entrance to advanced studies, while its reverse trend is noticed in the ratio of military service. The reduced ratio of military service is accounted for by the increase in the ratio of graduation which exceeds that of military service. The ratio of entrance to advanced studies was derived from the average increase per year over the past 10 years. As regards graduation and military service, average ratio was taken.

C. Projection of Employable Manpower

Employment ratio was applied to available manpower to determine the supply capacity of high-level manpower source, under the assumption that employable manpower is determined by available manpower and employment ratio. Those who are employed in 1979 account for 65.0% of total graduates from universities and 48.0% of total graduates from junior colleges. Employment ratio is expected to increase with the passage of years to 70% in universities and 50% in junior colleges in 1991.

Table IV-2 Employment Ratios of Graduates from Tertiary Education

Schools	1979	1981	1986	1991
Univ. and Col.	65.0	65.8	67.9	70.0
Jr. Colleges	48.0	46.7	48.3	50.0

D. Demand and Supply of High-Level Manpower

The additional requirement of high-level manpower was compared against the supply capacity of sources. Descrepancies arising from this comparison suggest actions to be taken over years up to 1991.

Table IV-3 Demand and Supply of High-Level Manpower

Unit: Thousand

	1979-81	1982-86	1987-61	1979-91
Add. Req't (A)	197.2 (96.0)	569.5	761.7	1,528.4
Univ.	86.5 (41.0)	285.4	439.9	811.8
Jr. Col.	30.3 (13.3)	130.7	245.7	406.7
Others	80.4 (41.7)	153.4	76.1	309.9
Supply Capacity (B)	148.5 (44.8)	509.4	746.0	1,403.9
Univ.	90.5 (28.4)	321.6	493.1	905.2
Jr. Col.	58.0 (16.4)	187.8	252.9	498.7
(B) – (A)	31.7 (△9.5)	93.3	60.4	185.4
Univ.	4.0 (△12.6)	36.2	53.2	93.4
Jr. Col.	27.7 (3.1)	57.1	7.2	92.0

Note: The figures in the parentheses are demand and supply in 1979.

The additional manpower requirement of high-level manpower to be met by colleges and universities is 41,000. This requirement is projected at 285,000 for 1982-86 and 439,000 for 1987-91, totaling 811,000. The share of junior vocational colleges and teacher's colleges is projected at 13,300 for 1979, 130,700 for 1982-86, and 245,700 for 1979-91, totaling 406,700.

As regards the supply capacity of sources, universities and colleges are capable of supplying 28,400. They will be able to supply 321,600 for 1982-86 and 493,100 for 1987-91, totaling 905,200 for 1979-91. The supply capacity of junior colleges is 16,400 in 1979, 187,800 for 1982-86 and 252,900 for 1987-91, totaling 498,700.

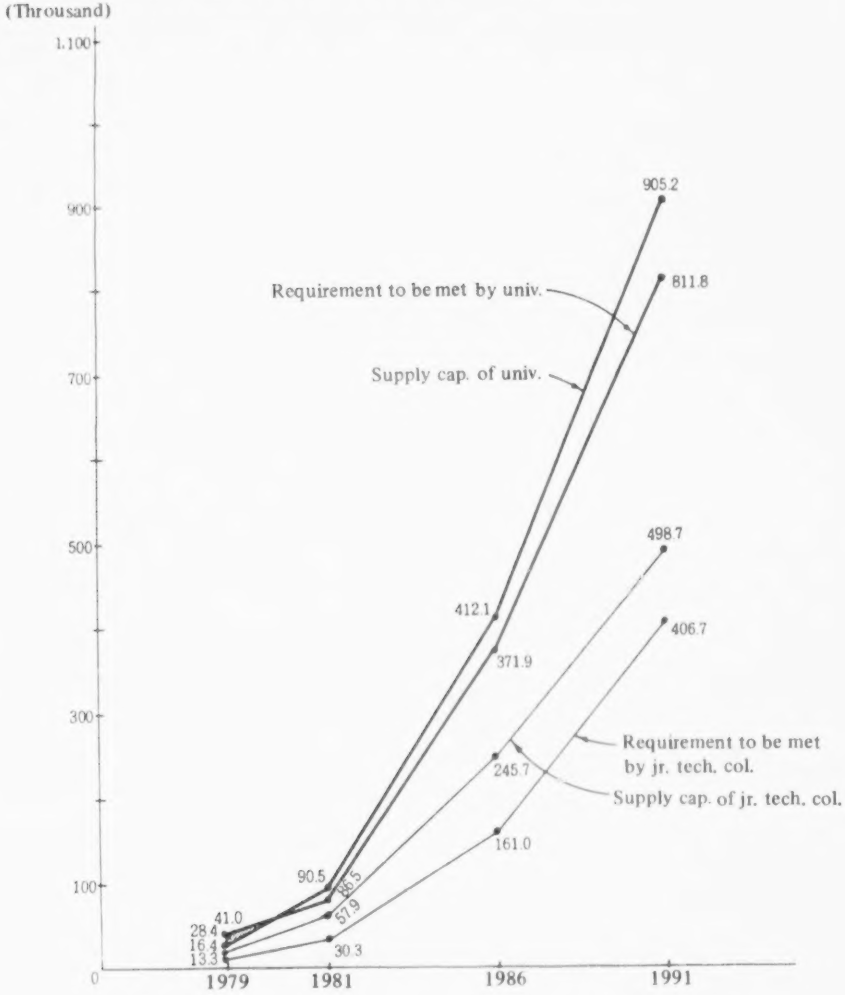

Diagram IV-1 Demand and Supply of High-Level Manpower

Comparing additional requirement against supply capacity produces the surplus of 93,400 graduates of colleges and universities and of 93,400 graduates of colleges and universities and of 92,000 graduates of junior colleges. Viewed from the social demand of manpower, there is need to readjust admission quota for colleges and universities.

Total enrollment in colleges and universities is projected as follows under the assumption that the 1980's admission quota is maintained until 1991.

Table IV-4 Projected Enrollment of Colleges and Universities

Unit: Thousand

Schools	1979	1981	1986	1991
Colleges & Univ.	334	543	684	684
Jr. Colleges	178	201	231	231

Table IV-5 Projected Opportunity for Higher Education

Description	1979	1981	1986	1991
Total Enrollment (Thousand)	512	744	915	915
Enrollment Ratio	14.01	19.94	26.58	25.50
Higher Ed. Pop. Per. 1000 people	13.61	19.18	21.73	20.22

As total enrollment of higher education rises from 512,000 in 1979 to 915,000 in 1991, enrollment ratio increases from 14.0% in 1979 to 25.5% in 1991. The proportional increase in the number of higher education population per 1,000 people means a relative increase in the opportunity for higher education.

3. Demand for and Supply of Scientists

The additional requirement of scientists rises from 2,400 in 1979 to 23,600 during the fifth economic development plan (1982-86) and again to 46,000 during the sixth economic development plan (1987-91), totaling 77,900. In the meantime, the supply capacity of graduate schools and advanced training institutes in existence rises from 1,200 in 1979 to 2,600 in the period 1982-86 and 22,000 in the period 1987-91.

the shortage of scientists – 1,200 in 1979, 3,000 in 1982-86 and 24,500 in 1987-91, totaling 30,000. The shortage of scientists suggests that enrollment capacity of graduate schools be increased on an incremental basis; the yearly increment is 600 for 1982-86 and 5,000 for 1987-91.

Table IV-6 Demand and Supply of Scientists

Description	1979-81	1982-86	1987-91	1979-91
Add. Require't (A)	8,231(2,388)	23,625	46,013	77,869
Supply Capacity (B)	5,801(1,168)	20,589	21,510	47,900
(B) – (A)	△2,430(△1,220)	△3,036	△24,503	△29,969

Note: The figures in the parentheses are demand and supply in 1979.

4. Demand for and Supply of Engineers

Included in the projection of demand for engineers are technicians. The sources of engineers include engineering colleges and junior technical colleges.

A. Distribution of Additional Requirement Among Sources

The sources of engineers are classified into engineering colleges, junior technical colleges and others. The proportional distribution of additional requirement among sources was determined on the basis of 1975's census and Statistical Yearbook of Education.

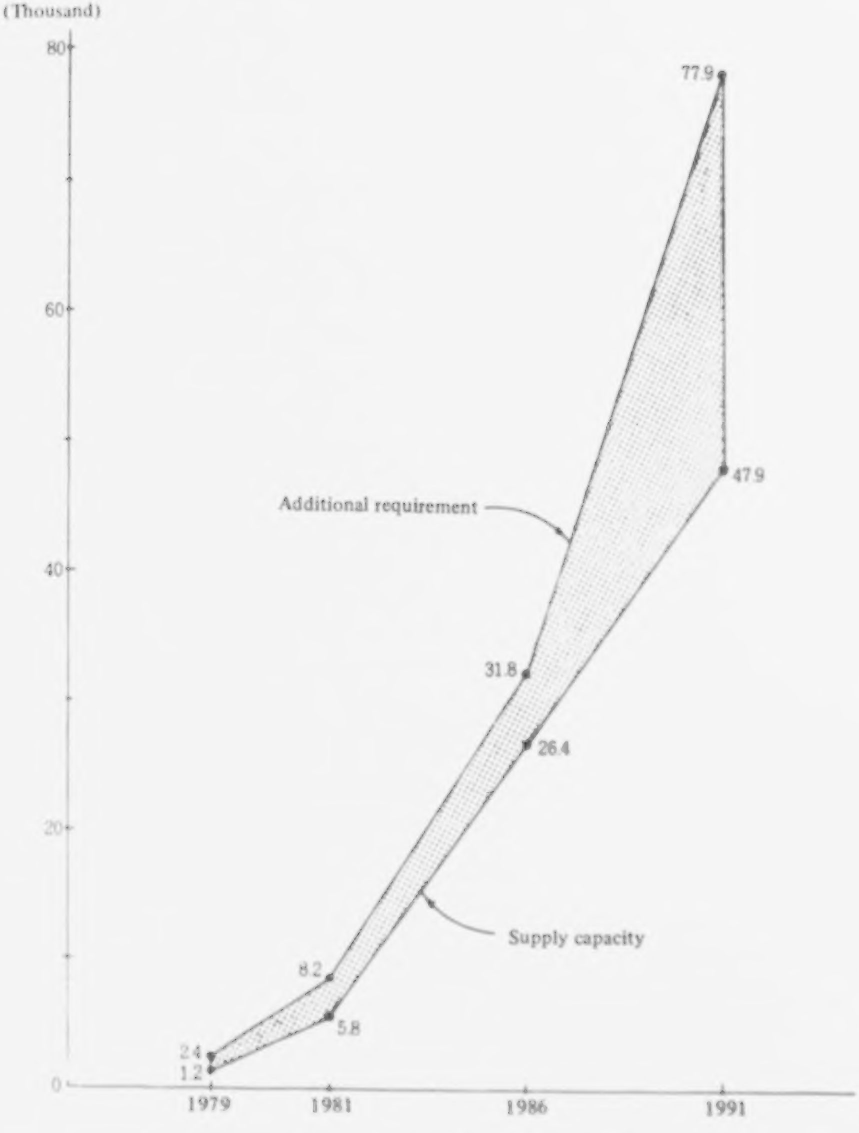

Diagram IV-2 Demand for and Supply of Scientists

Additional requirement of engineers is distributed between engineering colleges (35.86%) and junior technical colleges (13.44%). The forthcoming advent of a highly industrialized society is expected to alter the distributional pattern toward heavier reliance on engineering colleges.

Table IV-7 Composition Ratio of Additional Requirement of Engineers Among Sources (%)

Schools	1979	1981	1986	1991
Engineering Col.	35.86	39.88	49.94	60.00
Jr. Tech. Col.	13.44	17.03	26.02	35.00
Others	50.70	43.09	24.04	5.00

The proportion of engineering college graduates increases from 39.88% in 1981 to 49.94% in 1986 and again to 60.0% in 1991. The same trend is noticed in the proportion of junior technical colleges. By contrast, the proportion of other sources declines from 43.09 in 1981 to 24.04% in 1986 and again to 5.0% in 1991.

B. Enrollment Ratio of Available Manpower (Supply Capacity)

Using the same way as adopted in high-level manpower, employment ratio was applied to available manpower to obtain employable manpower of engineers. Table IV-8 shows employment ratios applied for different sources.

Table IV-8 The Ratios of Employable Manpower to Available Manpower (%)

Schools	1979	1981	1986	1991
Engineering Col.	62.00	62.50	63.75	65.00
Jr. Tech. Col.	34.00	35.00	37.50	40.00

Note: These figures exclude those employed as teachers.

The employment ratio of engineering colleges rises from 62.00% in 1979 to 65.00 in 1991, while that of junior technical colleges rises from 34.00 in 1979 to 40.00 in 1991.

C. Demand for and Supply of Engineers

The additional requirement of engineers is compared with the supply capacity of engineering and junior technical colleges over the period 1979-1991. According to Table IV-9, the additional requirement to be met by engineering colleges is 5,700 in 1979, 46,000 in 1982-86, and 110,100 in 1987-91, totaling 173,400. The additional requirement to be met by junior technical colleges is 2,100 in 1979, 22,500 in 1982-86 and 62,300 in 1987-91, totaling 91,800.

Against these requirements, the supply capacity of engineering colleges is 6,300 in 1979, 63,400 in 1982-86, and 91,600 in 1987-91, totaling 175,200. The supply capacity of junior technical colleges is 6,500 in 1979, 71,400 in 1982-86, 83,800 in 1987-91, totaling 180,400.

Balancing the additional requirement against the supply capacity produces a surplus of 17,400 graduates of engineering colleges over demand in 1982-86 but a shortage of 18,500 during the sixth economic development plan. Balance between demand and supply will be maintained after 1991. On the other hand, there is a surplus of 88,600 graduates of junior technical colleges over demand. Overviewing general trend, there is no need to expand the enrollment quota of engineering colleges, but the recorded surplus of supply over demand in junior technical colleges suggests the necessity of readjusting its enrollment quota.

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Table IV-9 Demand for and Supply of Engineers

Unit: Thousand

Description	1979-81	1982-86	1987-91	1979-91
Add. Require't (A)	45.5(19.9)	99.7	194.2	339.4
Engineering Col. (A_1)	17.3 (5.7)	46.0	110.1	173.4
Jr. Tech. Col. (A_2)	7.0 (2.1)	22.5	62.3	91.8
Others	21.2 (8.1)	31.2	21.8	74.2
Supply Capacity (B)	45.4(12.8)	134.8	175.4	355.6
Eng. Co. (B_1)	20.2 (6.3)	63.4	91.6	175.2
Jr. Tech. Co. (B_2)	25.2 (6.5)	71.4	83.8	180.4
(B) – (A)	21.1 (5.0)	66.3	3.0	90.4
(B_1) – (A_1)	2.9 (0.6)	17.4	18.5	1.8
(B_2) – (A_2)	18.2 (4.4)	48.9	21.5	88.6

Note: The figures in the parentheses are demand and supply in 1979.

Demand and supply are compared among different areas of engineers in Table IV-10.

Table IV-10 Demand for and Supply of Engineers in Major Occupational Areas

Areas	1979-81	1982-86	1987-91	1979-91
1. Civil Eng. & Architectural Engineers				
Add. req't (A)	3,482(1,864)	9,635	36,445	49,562
(A_1)	2,490(1,356)	6,442	22,638	31,570
(A_2)	992(508)	3,193	13,807	17,992
Supply Capacity (B)	8,503(2,360)	28,198	35,516	72,217
(B_1)	3,687(1,118)	14,056	18,773	36,516
(B_2)	4,816(1,242)	14,142	16,743	35,701
(B) – (A)	5,021(496)	18,563	△ 929	22,655
(B_1) – (A_1)	1,197(△ 238)	7,614	△3,865	4,946
(B_2) – (A_2)	3,824(734)	10,949	2,936	17,709

Note: The figures in the parenthes are demand and supply in 1979.

Areas	1979-81	1982-86	1987-91	1979-91
2. Electrical & Electronic Engineers				
Add. Req't (A)	4,707(1,370)	13,184	33,748	51,639
(A_1)	3,351(998)	9,386	21,559	34,296
(A_2)	1,356(372)	3,798	12,189	17,343
Supply Capacity (B)	12,321(3,642)	37,490	47,980	97,791
(B_1)	4,927(1,599)	18,548	25,818	49,293
(B_2)	7,394(2,043)	18,942	22,162	48,498
(B) – (A)	7,614(2,272)	24,306	14,232	46,152
$(B_1) - (A_1)$	1,576(601)	9,162	4,259	14,997
$(B_2) - (A_2)$	6,038(1,671)	15,144	9,973	31,155
3. Mechanical Engineers				
Add. Req't. (A)	6,582(1,863)	13,850	17,388	37,820
(A_1)	4,682(1,356)	9,311	11,128	25,121
(A_2)	1,900(507)	4,539	6,260	12,699
Supply Capacity (B)	10,167(2,677)	32,831	39,904	82,902
(B_1)	4,003(1,352)	15,998	20,799	40,800
(B_2)	6,164(1,325)	16,833	19,105	42,102
B – A	3,585(814)	18,981	22,516	45,082
$(B_1 - (A_1)$	△679(124)	6,687	9,671	15,679
$(B_2) - (A_2)$	4,264(818)	12,294	12,845	29,403
4. Chemical Engineers				
Add. Req't. (A)	1,456(401)	4,333	6,415	12,204
(A_1)	1,036(292)	2,907	4,106	8,049
(A_2)	420(109)	1,426	2,309	4,155
Supply Capacity (B)	5,123(1,468)	11,860	13,763	30,746
(B_1)	3,554(989)	8,195	9,455	21,204
(B_2)	1,569(481)	3,665	4,308	9,542
(B) – (A)	4,667(1,067)	7,527	7,348	18,542
$(B_1) - (A_1)$	2,518(695)	5,288	5,349	13,155
$(B_2) - (A_2)$	1,149(372)	2,239	1,999	5,387
5. Metal Engineers				
Add. Req't. A	1,426(419)	2,846	2,265	6,537
(A_1)	1,015(305)	1,913	1,452	4,380
(A_2)	411(114)	933	813	2,157
Supply Capacity B	2,498(741)	6,750	8,569	17,817
(B_1)	1,849(560)	5,029	6,554	13,432
(B_2)	649(181)	1,721	2,015	4,385
(B) – (A)	1,072(322)	3,904	6,304	11,280
$(B_1) - (A_1)$	834(255)	3,116	5,102	9,052
$(B_2) - (A_2)$	238(67)	788	1,202	2,228

Note: The figures in the parentheses are demand and supply in 1979.

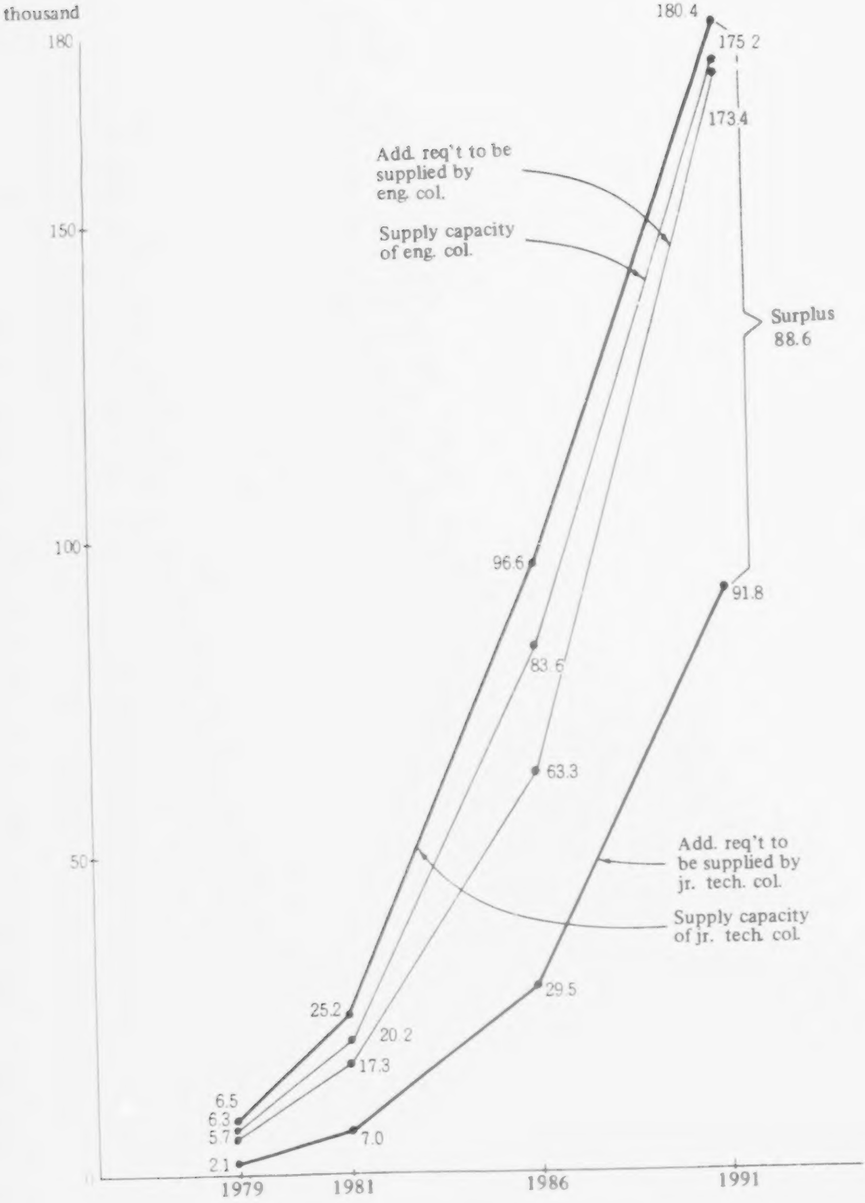

Diagram IV-3 Demand for and Supply of Engineers

To look at the supply capacity of engineering colleges, the period 1982-86 sees the surplus of engineers over demand in all occupational areas, namely; 9,200 electrical and electronic engineers, 7,600 civil and architectural engineers, 6,700 mechanical engineers 5,300 chemical engineers and 3,100 engineers. In the period 1987-91, surplus is noticed in metal engineers (5,100) and electrical and electronic engineers (4,300), with a shortage of 3,900 in civil and architectural engineers. In totality, the supply capacity of engineering colleges is balanced with demand. But a need arises to readjust enrollment in engineering colleges by occupational area. To look at the supply capacity of junior technical colleges, there are surpluses of supply over demand in all occupational areas in the period 1982-86, namely; electrical and electronic engineers (15,100), mechanical engineers (12,300), civil and architectural engineers (11,000), chemical engineers (2,200), and metal engineers (800). The period 1987-91 also sees the surplus of engineers in all areas, namely; mechanical engineers (12,800), electrical and electronic engineers (10,000), civil and architectural engineers (2,900), chemical engineers (2,000) and metal engineers (1,200). The need for readjustment of enrollment quota arises in electrical/electronic, mechanical, and civil/architectural fields which show larger surplus.

5. Demand for and Supply of Craftsmen

Of skilled people actually involved in production works, it takes a longer period of training to become craftsmen. In general, they are defined as having finished high school or above. The major sources of craftsmen are technical high school and vocation training program. The latter is non-formal, designed for non-skilled people from general high school. Vocational training is generally of one-year duration.

A. Distribution of Additional Requirement Among Sources

The additional requirement of craftsmen is distributed between technical high schools and vocational training programs. The proportion of each source to total additional requirement was determined on the basis of enrollment distribution. It is not easy, though to draw a clear distinction line between two sources due to substitutability of one source for the other.

B. Employment Ratio of Available Manpower

The number of graduates from technical high schools is obtained by applying drop-out ratio to admission quota. Excluding those advancing to universities from the graduates gives available manpower. Employment ratio is applied to the available manpower to determine employable manpower. In the case of vocational training program, dropouts are virtually non-existant and all of trained people are employed. For the projection of employable manpower from technical high schools, an average employment ratio was applied under the assumption that there is little variation of employment ratio among occupations.

Of total graduates, 65% are employed in 1979. Employment ratio rises to 67.5% in 1981, to 73.80% in 1986 and to 80% in 1991.

Table IV-11 Employment Ratios of Technical High School Graduates and Vocational Trained Manpower

	1979	1981	1986	1991
Tech. High School	65.0	67.5	73.8	80.0
Vocational Training	100.0	100.0	100.0	100.0

C. Demand for and Supply of Craftsmen

The additional requirements of craftsmen in eight occupations were compared with the supply of technical high schools and vocational training programs to produce descrepancies between the two.

According to Table IV-12, the additional requirement of craftsmen in 1979 is 58,000. 372,000 craftsmen are required for 1982-86 and 363,000 for 1987-91, totaling 911,000. Against these requirements, supply capacity is 44,000 in 1979, 306,000 in 1982-86 and 337,000 in 1987-91, totaling 786,000.

Balancing additional requirement against supply capacity, a shortage of 15,000 is registered for 1979, 66,000 for 1982-86 and 27,000 for 1987-91. Total shortage is 125,000.

Table IV-12 Demand for and Supply of Craftsmen

Description	1979-81	1982-86	1987-91	1979-91
Add. Req't A	175,874(58,365)	371,833	363,247	910,954
Supply Capacity B	142,729(43,609)	306,307	336,742	785,778
Tech. High School	98,477(30,305)	229,602	259,457	587,036
Voc. Training	44,252(13,354)	77,245	77,245	198,142
B – A	△33,145(△14,706)	△65,526	△26,505	△125,176

Note: The figures in the parentheses are demand and supply in 1979.

Table IV-13. Demand for and Supply of Craftsmen in Major Occupational Areas

Occupation	1979-81	1982-86	1987-91	1979-91
1. Metal Processor				
Add. Req't. (A)	11,687(3,611)	20,905	18,881	51,473
Supply Capacity (B)	7,076(2,861)	12,119	12,761	31,956
Tech. High School	2,836(1,025)	6,109	6,751	15,696
Voc. Training	4,240(1,836)	6,010	6,010	16,260
(B) – (A)	△4,611(△750)	△8,786	△6,120	△9,517
2. Chemical Processor				
Add. Req't. (A)	10,736(3,153)	22,897	26,354	49,990
Supply Capacity (B)	9,500(3,225)	17,363	19,177	46,046
Tech. High School	9,500(3,225)	17,363	19,177	46,040
Voc. Training	–	–	–	–
(B) – (A)	△1,239(△72)	△5,534	△7,177	△13,950

Occupation	1979-81	1982-86	1987-91	1979-91
3. Spinners/Weavers				
Add. Req't. (A)	11,751(3,489)	20,495	17,590	49,836
Supply Capacity (B)	4,164(1,420)	5,892	6,241	16,297
Tech. High School	3,033(1,137)	3,772	4,121	10,926
Voc. Training	1,131(283)	2,120	2,120	5,371
(B) – (A)	△7,587(△2,069)	△14,603	△11,349	△33,539
4. Mechanical Craftsmen				
Add. Req't. (A)	63,309(19,983)	144,591	146,632	354,532
Supply Capacity (B)	55,098(16,224)	125,629	143,044	323,771
Tech. High School	38,682(11,646)	96,034	113,449	248,165
Voc. Training	16,416(4,578)	29,595	29,595	75,606
(B) – (A)	△8,211(△3,759)	△18,962	△3,588	△30,761
5. Electrical/Electronic				
Add. Req't. (A)	32,285(10,225)	63,807	60,959	157,051
Supply Capacity (B)	39,545(12,519)	75,504	80,984	196,033
Tech. High School	30,673(9,779)	60,174	65,654	156,501
Voc. Training	8,872(2,740)	15,330	15,330	39,532
(B) – (A)	7,260(2,294)	11,697	20,025	38,982
6. Plumbers/Welders				
Add. Req't. (A)	11,273(3,566)	23,760	27,505	62,538
Supply Capacity(B)	10,657(2,627)	21,697	22,130	54,484
Tech. High School	2,068(266)	6,127	6,560	14,755
Voc. Training	8,589(2,361)	15,530	15,570	39,729
(B) – (A)	△616(△939)	△2,063	△5,375	△8,054
7. Construction Workers				
Add. Req't. (A)	26,850(11,732)	55,378	42,485	124,713
Supply Capacity (B)	15,424(4,107)	46,591	50,845	112,860
Tech. High School	11,211(2,968)	38,906	43,160	93,277
Voc. Training	4,213(1,139)	7,685	7,685	19,583
(B) – (A)	△11,426(△7,125)	△8,787	△8,360	△11,853
8. Equipment Operators				
Add. Req't. (A)	7,980(2,606)	20,000	22,841	40,821
Supply Capacity (B)	1,265(676)	1,512	1,560	4,381
Tech. High School	474(259)	577	625	1,676
Voc. Training	791(417)	935	935	2,661
(B) – A	△6,715(△1,930)	△18,488	△21,281	△46,484

Note: The figures in the parentheses are demand and supply in 1979.

The occupational areas which show a noticeable shortage of craftsmen are equipment operation (46,000), pinning and weaving (34,000), mechanical works (31,000), metal processing (20,000), chemical processing (14,000), construction (12,000) and plumbing and welding (8,000). It is only electrical and electronic occupation that records a surplus (39,000) of supply over demand.

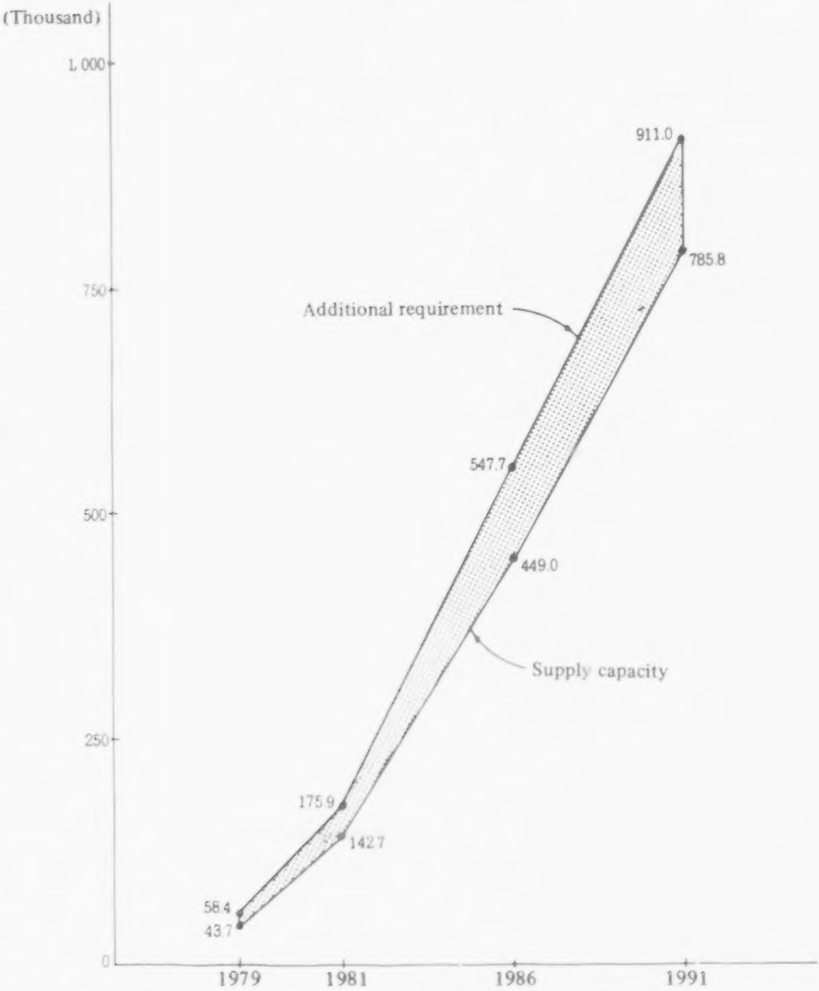

Diagram IV-4 Demand for and Supply of Craftsmen

V. STRATEGIES

The economic crisis in the late 1970's prompted the shift of industrial structure from labor-intensive to capital-intensive structure toward the realization of highly industrialized society. This trend necessitates higher quality of labor force, heightening concern for strategies of manpower development. Predicting manpower needs in a long-term perspective, high-level manpower with expertise and special skill will assume a greater proportion of total labor force. Even in routine production works, highly skilled workers will form the mainstay of production workers. As such, the structural change of employment calls for a rearrangement of manpower supply system with greater attention directed to qualitative development.

Strategies for manpower development may vary widely in content and form, depending the viewpoint from which they are looked at. The consideration of strategies in this study features the focus of attention placed on high-level manpower in scientific and technical field, whose importance is highlighted for intensive development in the 1980's.

1. Qualitative Development of Higher Education

The increasing demand for professional and technical workers necessitates a rearrangement of manpower supply system in a way that directs greater attention to the quality of higher education. What follows dicusses the ways in which higher education remains responsive to new needs arising in the process of rapid development toward a highly industrialized society.

A. Expansion of Facilities for Higher Education

In view of projected demand for high-level manpower, there is no need to enlarge enrollment quota beyond the admission ceiling set in 1980 and the graduation ceiling set in 1984. Providing that these ceilings are maintained, total enrollment in higher education will rise from 14% (of population eligible for higher education) in 1979 to 26% in 1991. Enrollment in junior colleges will rise from 178,000 in 1979 to 231,000 in 1991. During the same period, enrollment in colleges and universities will increase from 334,000 to 684,000. Total enrollment in higher education will increase from 512,000 in 1979 to 915,000 in 1991. In preparation for the rapidly increasing enrollment, investment plan should be formulated to secure a commensurate expansion of school facilities.

Table V-1 Projection of Higher Education Population

Unit: Thousand

	1979	1981	1986	1991
Total	512	744	915	915
Col. & Univ.	334	543	684	684
Jun. Col.	178	201	231	231

* The above figures were projected, providing that the present admission quota is maintained.

Table V-2 Opportunities for Higher Education in Major Countries

Countries	Years	Enrollment ratio (%)	No. of students per 1,000 people
Korea	1979	14	13.6
	1991	26	20.2
Japan	1976	32	18.3
U.S.A.	1974	34	42.6
France	1974	22	17.7
W-Germany	1974	21	12.0

B. Strengthening of Graduate Education in Science and Technology

The accelerated pace of science and technological development heightens the importance of graduate education in science and technology. Accordingly, policy should be formulated to provide support for the improvement of conditions for graduate education.

Because of competitive scouting for top-notch college graduates among industries, it will be almost impossible to attract them to graduate schools without intensives such as scholarships and exemption from military service. The graduate school should be equipped with an around-the-clock research center which accommodates 50% of the enrolled students. The library and laboratory should be made available to graduate students all times.

The strengthening of graduate education should be promoted in two ways. One is the division of labor among graduate school and other is multi-disciplinary approach. At a glance, it seems that these two run counter to each other, but it must be understood that the former refers to a collaborative effort drawing on the deep well of individual strengths. Policy should be formulated to support the improvement of working condition for these institutes as related to staffing, reserch grants, and financial aid for research assistants. At the same time, a cooperative network should be developed to link graduate schools to research institutes, whereby they benefit from a pool of resources.

Providing that the 1981's admission quota is maintained, the period 1982-86 will see a shortage of scientists projected at 3,500. The shortage resistered for 1987-91 will be 25,300, bringing total shortage to 31,400. Apart from quantitative aspect, graduate education leaves much to be improved in quality.

C. Qualitative Development of Engineering Colleges and Junior Technical Colleges

In the case of engineering college, prime concern is not so much

Table V-3 Multi-Disciplinary Curriculum of MIT

Courses	Disciplines
Accoustics	Medical eng., Marine technology, elect. eng., aeronautics, architecture
Biomedical eng.	Biology, physics, and social sciences
Engineering	Engineering disciplines
Health Science eng.	Cooperative program with Havard
Law-related studies	Engineering disciplines, including cooperative programs with other univ.
Neuro sciences research program	Medical sciences
Polymenic materials	Engineering disciplines
Power engineering	Engineering disciplines

Source: Korea Educational Development Institute, *The Long-term Prospect for Educational Development 1979-'91*, p. 128.

with quantitative expansion as qualitative improvement.

Providing that the 1980's admission quota and the 1984's graduation quota are maintained, a surplus of 17,400 over demand is expected of engineering college students for 1982-'86. This surplus will be balanced by a shortage of 18,000 expected in 1987-'91.

The decisive factor for engineering education is the quality of faculties. But the chronical shortage of faculties awaits action, while an attempt is made to upgrade the quality of faculties. An effective way to address the former is to offer opportunities for experienced engineers in plant to teach. An attempt to address the latter necessitates the enlargement of opportunity for in-service training, refreshment courses and research activities which will expose them to the rapidly developing frontiers of science and technology. In a long-term perspective, scholarships for overseas degree programs offer an effective means of securing qualified faculties. It is essential that educational system should be flexible enough to meet emerging needs; curriculum give heavier weight to basic science; and educational programs be continuously updated to reflect industrial needs as emerging in plants. The credit requirement of engineering education should not be bound by unitary criteria applying to other disciplines. It is also necessary to stress shop or lab practice while increasing support for the creation of adequate conditions.

Engineering College Evaluation Committee may well be institutionalized as an additional spur to the development of engineering education, charged with a continuous search for the ways to improve engineering education.

Providing that 1982's graduation quota is maintained, the engineers (including technicians) supplied by junior technical colleges exceed their demand; a surplus of 48,900 for 1982-86 and 21,500 for 1987-91. The surplus of supply over demand necessitates reexamination of technical college education with regard to enrollment quota and quality.

The shortage of teachers of junior teacher's colleges will become more serious as enrollment in engineering colleges increase and this will be coupled with the difficulty of securing competent teachers, giving urgency to comprehensive measures for staff development. In-service training needs to be strengthened with the enlargement of opportunity for overseas studies. This will require a substantial increase in scholarship. The teachers who lack industrial experience should be urged to gain it. Analysis should be made of tasks assumed by the graduates of junior technical colleges as a means of keeping curriculum relevant to on-site needs. At the same time, the operation of curriculum should be flexible enough to diversify program in accordance with individual ability and needs. A supplementary program may well be provided for the graduates of general high school to put them on equal par with those of technical high schools. Since junior technical colleges offer short-term programs, their offerings should be clearly defined in relation to technical high school and engineering colleges. Still it is necessary to provide an avenue for competent students to pursue advanced schooling.

The expansion of facilities should focus on securing laboratory equipment and libraries, which create conditions for stressing shop practice. Innovative programs should be promoted through pilot colleges. Hence, it is necessary to designate and operate model junior colleges to spearhead the reform of their institutional infrastructure and curricula. The junior technical college should also serve the purpose of community college which caters its programs to community needs; special programs of 6-12 month duration will offer a means of constellating unskilled people into productive works.

2. Strengthening of Technical Education and Vocational Training

With the rapidly developing trend toward heavy chemical industries, the demand for skilled manpower will increase substantially, giving urgency to the quantiative and qualitative development of technical education. In view of the supply capacity of technical high school, technical education should be supplemented by vocation training in general high school and out-of-school programs.

A. Qualitative Improvement of Technical High School

Since the establishment and operation of technical high school requires an enormous capital investment in facilities and equipment, a plan to expand their enrollment necessitates a careful weighing of alternatives on a priority basis. Chemical industry merits top priority and locating a technical school near the industrial complex of its relevant field offers many advantages. An intergrated high school system may be an alternative in view of its flexibility in meeting needs as diversified by regional characteristics.

The development of technical education should be promoted by increasing the efficiency of the present system which classifies technical high school into mechanical high school, demonstrative technical high school, general technical high school and specialized technical high school on a priority basis. From the viewpoint of manpower development, the functional specialization of technical high schools offers a new possibility, for it maximizes the utility of facilities and equipment.

B. Reform of Curriculum in Technical Education

The curriculum of technical high school should be restructured and updated in the context of its complementary relationship with industry. In the case of the specialized technical high schools, for example, the curricula are so excessively oriented toward the mastery of specific skills that they fail to produce well-rounded skilled workers adequately equipped with an understanding of theory, the principles of good work procedures, quality control and safety measures. It is required that the curricula include an appropriate mix of theory, practice and field experience. In other technical high school, efforts should be made to ensure that greater weight is given to field experience.

C. Recruitment of Vocational Education Teachers

High quality teachers equipped with suitable industrial experience constitutes a prerequisite for the qualitative development of technical education. Industrial experience should be highly valued as an important element of a teacher's qualifications. The present qualification system should be revised to give due credit for industrial experience or licensed skill in qualifying for certification as a teacher of technical subjects. In order to attract able teachers, incentive measures should be devised in the form of special allowances and exemption from military duty.

D. Strengthening of Vocational Education in General High School

The technical high school should dramatize its potential contribution to the development of skilled manpower by offering vocational program for job-bound students. [illegible] of general high school graduates are spilled over to labor force without vocational skills. This heightens the importance of general high school's role in increasing the employability of their graduates. The vocational program of general high school may be distinguished from those of technical high school by focussing on general skills transferrable to specific uses.

E. Effective Occupational Training

Occupational training should be developed in a mutually complementary relationship with technical education in school with an incremental expansion of training facilities. In view of the increasing demand for skilled manpower, enrollment should be increased until 1981, although its emphasis is limited to candidates for applied skills that require a relatively long time span to acquire.

Up to the present, occupational training has largely been aimed at those who have finished middle school. The major target group for occupational training should be shifted to high school graduates in selected areas related to strategical occupations.

In occupational training, the shortage and low quality of teachers remains a matter of serious concern to be addressed with top priority. The number of skilled workers who have been trained through regular and license courses for teaching from 1968 to 1978 is 4,179. It is still in doubt how many of them will stay to serve as an instructor. In order to draw competent technicians to teaching profession, an incentive scheme should be developed.

F. Development of Technical College

The junior technical high school should offer a wide variety of training programs for those presently engaging in productive works in a way that upgrades their technical competency in response to the growing sophistication of industrial technology, in addition to its primary function of producing technicians. With the diversification of its program, there should be a commensurate expansion of dormitory facilities and scholarship. Welfare and fringe benefits should be devised to enhance the social and economic status of technicians.

G. *Increased Investment in Human Resource Development*

The development of skilled human resource requires an enormous amount of investment over a long time span, and such an investment does not produce an immediate effect. This fact handicaps the efforts of educators to bid for a decent share of government budget for human resource development. An alternative is to urge industrial enterprises, end users of trained manpower, to assume a sizeable proportion of total investment. Tax exemption may be considered an effective incentive to industries [illegible] in investment. The current program which obligates end users to share the cost of occupational training should be reformed so as to increase their commitment to a wider variety of educational programs related to the development of skilled manpower.

3. *Improvement of Manpower Development System*

The development of human resources involves an on-going process which will last a lifetime. Therefore, the education given in school constitutes only a part of this process. This perspective underscores the importance of out-of-school education, a good example of which is occupational training. It may be worthwhile to make a schematic presentation of the functional division of the process of developing human resources along the various stages of education.

A. *Functional Division Between School Levels*

Primary and middle schools should develop in youngsters the habit of scientific thinking, respect for manual work, a sound work ethic and the desired attitude. At these levels, it is crucially important to integrate work with learning.

High schools should provide the basis for career development in various types of productive skills. As a half of all high school graduates are expected to pursue higher education beginning in the early 1990s, the prime concern at this level will be to provide a solid foundation for advanced studies in the humanities and sciences. Nonetheless, it is still important to include in the curriculum vocational programs designed to equip the employment-bound students with basic skills which will facilitate their adaptation to the changing needs of the job market.

Occupational training should focus on the application of specific skills on the basis of primary and middle school education. This training is offered by vocational training institutes, both public and private, and on-the-job training programs operated by industrial firms. This on-the-job training should involve various stages with additional training both in and out of school.

Higher education should produce high level professionals in various walks of life in response to the growing need for them. In this connection, a short-term program should be devised to produce middle level engineers and managers.

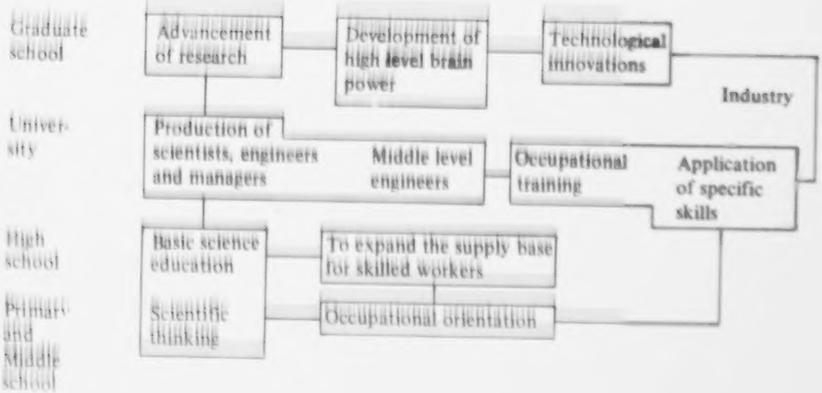
Graduate school
University
High school
Primary and Middle school
Advancement of research
Development of high level brain power
Technological innovations
Industry
Production of scientists, engineers and managers
Middle level engineers
Occupational training
Application of specific skills
Basic science education
To expand the supply base for skilled workers
Scientific thinking
Occupational orientation

Diagram V-1 Model of Manpower Development System

Graduate schools have primarily focused on the development of college teachers. They should also concern themselves with the development of high level manpower, particularly researchers, to stimulate technological innovations. To this end, the research promotion policy should provide for more active participation by the private sector.

B. Reform of Employment Policy

The general trend is that the educational level of labor force is higher than that actually required of occupation. The present employment policy which bases the entry requirement of occupation on educational attainment alone leaves much to be desired. The standard entry requirement should be adjusted downward on a realistic basis in a way that gives it relevance to actual needs, while increasing the role of in-plant or on-the-job-training in filling out the gap between quality standard and actual needs. At the same time, efforts should be made to reduce wage gap attributed to educational attainment. A quota system which distinguishes between educational attainments commends itself as a means of eliminating discrimination according to educational attainment.

In a society caught in a hectic pace of technological change, expertise or special skill, whatever it may be, may become obolete in a matter of few years. The need always exists for a skilled person to refresh his skill in response to new needs. Given this fact, it is extremely difficult to relate the projected demand of manpower to specific education levels in a long-term perspective. A realistic approach may be to draw on in-plant or on-the-job training on the basis of school education.

C. Establishment of Occupational Information Service System

The government-sponsored manpower planning has a limited effect. In the absence of reliable information on labor market, mapower planning is bound to produce surplus or shortage in some occupations, whatever technique it may employ. In order to prevent the structural imbalance of labor market between supply and demand, reliable information is of fundamental importance.

The Ministry of Labor Affairs has been endeavoring to set up a nationwide occupational information system in an attempt to bring the demand and supply of individual industries under a single purview. But this attempt was impeded by self-contained manpower plan of individual industries. An effective operation of this system requires their cooperation.

Unless allowance is made for an autonomous function of labor market, the effect of occupational information system is invalidated. Furthermore, it requires that personnel capable of competent vocational guidance be recruited and that its functions be diversified, including the development of aptitude test, compilation of occupational dictionary, publication of vocational guidance and electronic data processing.

D. Reform of Skill Certification System

Skill certification examination is of fundamental importance as a means of securing social recognition for the skill one posseses. But the gap between qualification standard and actual competence needed of an occupation and between educational program and actual needs in plant underlines the necessity of reforming the skill certification system presently in use. The skill certification system is a benchmark against which to measure the relevancy of educational or training program to industrial needs.

A provision should be enacted to make it mandatary to register the certified skill which constitutes an important criterion for the determination of employability and salary scale. The operation of certification system will be effectuated by incorporating certification and registration into a single system.

E. *Establishment of Manpower Development and Management Machinery*

Manpower planning requires a systematic approach in a long-term perspective. In view of the magnitude of works involved, a machinery is much in order, capable of conducting in-depth research required for manpower planning. This machinery should be equipped with an information center which collects, analyzes, processes and stores data. By forecasting the future profile of manpower, it will herald actions to be taken for balancing supply and demand. Research to be undertaken by this machinery will pertains to occupational structure, school enrollment trend, employment ratio, task analysis, comparative study of manpower, labor productivity, skill certification and policy suggestions.

APPENDICES

1975

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	11,829,933	5,424,997	59,996
0/1 Professional, Technical and Related Workers	485,175	3,194	2,285
01 Physical Scientists	2,710	0	0
02/03 Architects, Engineer, and Related Technicians	111,496	565	2,254
027/038 Mining Engineers and Technicians	2,109	0	1,087
026/037 Metallurgists and Metallurgical Technicians	5,722	0	310
024/035 Mechanical Engineers and Technicians	36,517	0	338
023/034 Electrical, Electronics Engineers and Technicians	14,549	120	232
025/036 Chemical Engineers and Technicians	8,056	0	57
022/033 Civil Engineers and Technicians	29,965	118	50
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	14,578	327	180
04 Aircraft and Ships Officers	13,836	2,526	0
06/07 Medical, Dental, Veterinary and Related Workers	96,671	20	0
061 Medical Doctors	17,195	0	0
063 Dentist	2,278	0	0
067 Pharmacists	19,975	0	0
071 Professional Nurses	20,784	0	0
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	36,439	20	0
11 Accountants	1,546	5	0
13 Teacher	187,525	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	71,391	78	31
2. Administrarive and Managerial	116,313	911	1,314
3. Clerical and Related Workers	872,826	3,590	3,247
4. Sales Workers	1,447,114	1,235	137
5. Service Workers	806,184	1,058	675

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
2,204,963	34,995	510,997	1,876,000	360,994	150,995	1,205,996
74,279	2,435	27,874	15,507	12,493	9,538	337,570
0	0	0	0	0	0	2,710
64,382	2,274	27,331	956	1,667	3,711	8,356
638	0	0	0	0	0	384
4,945	0	0	0	0	8	459
32,062	88	1,035	171	1,385	359	1,079
7,764	1,821	1,910	484	229	447	1,542
6,593	0	290	56	0	19	1,041
622	365	23,970	226	35	2,512	2,067
11,758	0	126	19	18	300	1,784
395	0	38	28	10,562	0	287
1,332	0	0	11,291	0	0	84,028
6	0	0	0	0	0	17,189
0	0	0	0	0	0	2,278
907	0	0	11,291	0	0	7,777
347	0	0	0	0	0	20,437
72	0	0	0	0	0	36,347
294	48	52	231	22	572	322
0	0	0	0	0	0	187,525
7,876	113	453	3,001	242	5,255	54,342
53,678	751	7,587	8,105	12,244	5,502	26,221
269,370	14,193	23,442	67,279	109,623	85,042	297,040
60,821	769	2,413	1,328,028	2,905	40,740	10,066
35,559	1,443	6,418	399,929	7,207	6,450	347,445

1975

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	5,407,904	5,397,149	4,425
7/8/9 Production and Related Workers	2,694,417	17,860	47,913
71 Miners, Quqrrymen, Well Drillers and Related Workers	41,952	10	39,109
72 Metal Processors	48,470	0	117
73 Wood Preparation Workers and Paper Makers	32,921	53	28
74 Chemical Processors and Related Workers	56,238	87	1,124
75 Spinners, Weavers, Knitters, Dyers and Related Workers	362,745	69	32
76 Tanners, Fellmongers and Pelt Dressors	2,090	0	0
77 Food and Beverage Processors	138,118	599	213
78 Tobacco Preparers and Tobacco Product Makers	11,230	49	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	286,810	10	17
80 Shoemakers and Leather Good Makers	37,639	0	0
81 Cabinet Makers and Related Wood Workers	40,099	17	0
82 Stone Cutters and Carvers	8,074	24	1,641
83 Blacksmiths, Hammersmiths and Forging Press Operators	102,634	0	77
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	157,562	221	1,084
85 Electrical Fitters and Related Electrical and Electronics Workers	132,305	35	473
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	2,108	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	64,800	15	164
88 Jewllery and Precious Metal Workers	6,091	0	0
89 Glass Formers, Potters and Related Workers	23,651	0	32
90 Rubber and Plastics Product Makers	85,815	0	0
91 Paper and Paperboard Products Makers	14,029	0	0
92 Printers and Related Workers	41,269	68	0
93 Painters	23,989	0	0
94 Production and Related Workers, n.e.c	105,047	84	188
95 Bricklayer, Carpenters and Construction Workers	370,483	665	123
96 Stationary Engine and Related Equipment Operators	19,053	58	52
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	32,091	687	1,351
98 Transport Equipment Operators	233,591	13,429	924
99 Labourers, n.e.c	213,513	1,680	1,164

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
812	24	463	1,865	540	171	2,455
1,710,444	15,380	442,800	55,287	215,982	3,552	185,199
2,454	23	330	0	0	0	26
47,434	0	384	372	8	0	155
31,717	0	868	177	0	0	78
54,165	52	84	463	0	0	263
358,053	64	322	1,109	11	0	3,085
2,080	0	0	10	0	0	0
134,164	0	107	2,455	13	6	561
10,980	0	0	0	157	0	44
274,567	0	287	10,722	0	0	1,207
34,678	0	0	1,733	0	0	1,228
37,092	10	1,664	513	99	44	660
3,468	0	2,698	39	0	0	204
100,388	71	563	134	303	85	1,013
100,708	730	1,791	6,479	12,614	269	33,666
93,675	9,401	7,827	8,627	4,317	265	7,685
498	0	0	194	0	0	1,416
58,193	847	3,130	271	407	35	1,738
4,808	0	0	914	0	0	369
23,234	0	104	183	11	0	87
85,000	0	68	53	37	76	581
13,564	0	57	58	0	37	313
38,189	0	71	269	22	110	2,540
5,372	10	14,714	2,777	218	0	898
102,638	7	320	806	74	76	854
15,816	1,755	344,165	2,239	600	412	4,708
10,409	837	3,379	1,155	516	427	2,220
4,720	101	2,466	531	19,361	61	2,813
26,188	452	3,650	5,085	172,726	1,292	9,845
36,192	1,020	53,751	7,919	4,488	357	106,942

1975

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	2,204,963	232,998	783,993	80,998
0/1 Professional, Technical and Related Workers	74,279	6,450	11,767	499
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	64,382	6,096	10,481	477
027/038 Mining Engineers and Technicians	638	0	289	6
026/037 Metallurgists and Metallurgical Technicians	4,945	0	22	0
024/035 Mechanical Engineers and Technicians	32,062	3,346	1,884	323
023/034 Electrical, Electronics Engineers and Technicians	7,764	488	695	140
025/036 Chemical Engineers and Technicians	6,593	484	1,055	8
022/033 Civil Engineers and Technicians	622	93	7	0
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	11,758	1,685	6,529	0
04 Aircraft and Ships Officers	395	0	0	10
06/07 Medical, Dental, Veterinary and Related Workers	1,332	72	275	0
061 Medical Doctors	6	0	0	0
063 Dentist	0	0	0	0
067 Pharmacists	907	0	0	0
071 Professional Nurses	347	0	275	0
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	72	72	0	0
11 Accountants	294	153	36	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	7,876	129	975	12
2. Administrarive and Managerial	53,678	5,866	11,074	2,155
3. Clerical and Related Workers	269,370	32,911	50,600	6,742
4. Sales Workers	60,821	18,215	11,105	1,560
5. Service Workers	35,559	4,269	9,598	923

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
108,995	283,997	92,995	73,998	457,996	88,993
7,006	9,116	4,749	9,079	25,198	415
0	0	0	0	0	0
1,517	7,874	4,573	8,987	24,197	180
0	43	237	45	18	0
126	68	0	3,019	1,700	10
734	1,763	2,410	3,423	18,121	58
284	741	406	1,317	3,686	7
9	3,549	90	1,041	323	4
17	134	193	75	87	16
317	1,576	1,237	67	262	85
0	0	0	0	385	0
9	901	30	17	28	0
0	0	2	4	0	0
0	0	0	0	0	0
0	864	2	13	28	0
0	0	0	0	0	0
5	11	0	0	53	36
0	0	0	0	0	0
5,475	330	146	75	535	199
5,838	9,804	2,457	1,639	12,929	1,916
24,745	65,456	11,010	10,412	61,078	6,416
6,733	14,834	1,438	446	5,154	1,336
1,848	7,975	1,597	1,492	7,119	738

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	812	289	214	0
7/8/9 Production and Related Workers	1,710,444	164,998	689,635	69,119
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,454	493	31	0
72 Metal Processors	47,434	52	266	110
73 Wood Preparation Workers and Paper Makers	31,717	452	108	23,989
74 Chemical Processors and Related Workers	54,165	260	693	0
75 Spinners, Weavers, Knitters, Dyers and Related Workers	358,053	133	354,570	122
76 Tanners, Fellmongers and Pelt Dressors	2,080	0	2,035	0
77 Food and Beverage Processors	134,164	133,249	647	139
78 Tobacco Preparers and Tobacco Product Makers	10,980	9,324	1,501	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	274,567	412	270,703	661
80 Shoemakers and Leather Good Makers	34,678	39	33,458	35
81 Cabinet Makers and Related Wood Workers	37,092	503	984	33,642
82 Stone Cutters and Carvers	3,468	0	125	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	100,388	109	745	176
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	100,708	3,226	8,700	439
85 Electrical Fitters and Related Electrical and Electronics Workers	93,675	948	1,633	208
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	498	0	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	58,193	299	715	221
88 Jewllery and Precious Metal Workers	4,808	0	0	133
89 Glass Formers, Potters and Related Workers	23,234	50	0	75
90 Rubber and Plastics Product Makers	85,000	0	160	0
91 Paper and Paperboard Products Makers	13,564	305	68	173
92 Printers and Related Workers	38,189	241	57	18
93 Painters	5,372	66	81	895
94 Production and Related Workers, n.e.c	102,638	836	1,594	970
95 Bricklayer, Carpenters and Construction Workers	15,816	332	1,381	3,476
96 Stationary Engine and Related Equipment Operators	10,409	1,525	2,220	199
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	4,720	1,161	193	479
98 Transport Equipment Operators	26,188	5,227	3,641	820
99 Labourers, n.e.c	36,192	5,756	3,326	2,139

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	191	23	6	62	27
62,825	176,621	71,721	50,924	346,456	78,145
0	1,313	502	28	64	23
14	354	244	27,130	18,873	391
6,905	0	0	24	191	48
46	51,591	513	96	714	252
29	1,549	53	61	210	1,326
0	0	0	0	0	45
0	44	4	0	21	60
0	155	0	0	0	0
263	811	15	0	307	1,395
0	1,040	0	0	24	82
13	47	183	5	523	1,192
0	0	3,270	0	47	26
187	1,500	606	8,851	87,943	271
667	6,589	1,027	2,482	77,167	411
251	1,753	485	999	87,144	254
29	0	0	0	393	76
118	2,254	296	4,586	49,530	174
0	0	21	12	172	4,470
53	396	21,112	0	1,136	412
194	83,972	31	17	104	522
12,716	275	0	0	0	27
37,124	277	4	65	356	47
23	1,311	74	129	2,419	374
349	1,365	30,984	64	1,815	64,661
388	821	3,775	1,246	4,103	294
653	2,520	246	360	2,638	48
45	745	813	553	691	40
1,098	7,391	2,107	1,405	4,122	377
1,660	8,548	5,356	2,811	5,749	847

1976 Manpower Demand by

	Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00	TOTAL	12,555,941	5,600,996	64,997
0/1	Professional, Technical and Related Workers	511,116	3,466	2,465
01	Physical Scientists	2,760	0	0
02/03	Architects, Engineer, and Related Technicians	130,359	680	2,420
027/038	Mining Engineers and Technicians	2,248	0	1,199
026/037	Metallurgists and Metallurgical Technicians	7,443	0	314
024/035	Mechanical Engineers and Technicians	45,228	0	348
023/034	Electrical, Electronics Engineers and Technicians	17,604	135	240
025/036	Chemical Engineers and Technicians	9,566	0	61
022/033	Civil Engineers and Technicians	30,215	142	63
021, 028, 029, 031, 032, 039,	Other Engineers and Technicians	18,055	403	195
04	Aircraft and Ships Officers	15,191	2,606	0
06/07	Medical, Dental, Veterinary and Related Workers	101,840	25	3
061	Medical Doctors	18,170	0	0
063	Dentist	2,521	0	0
067	Pharmacists	19,909	0	0
071	Professional Nurses	22,983	0	2
062, 064, 065, 066, 068, 069, 072-079	Other Medical Workers	38,257	25	1
11	Accountants	1,864	5	0
13	Teacher	188,513	0	0
05, 08, 09, 12-19	Other Professional, Technical and Related Workers	70,589	150	42
2.	Administrarive and Managerial	129,937	1,014	1,439
3.	Clerical and Related Workers	946,603	3,901	3,581
4.	Sales Workers	1,464,546	1,349	151
5.	Service Workers	812,617	1,140	687

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
2,677,963	37,996	528,999	1,877,999	389,995	155,998	1,220,998
92,235	2,745	28,862	15,816	14,194	9,854	341,479
0	0	0	0	0	0	2,760
81,523	2,568	28,004	1,127	1,971	3,986	8,080
700	0	1	0	0	0	348
6,703	0	0	0	0	8	418
40,559	98	1,106	198	1,550	365	1,004
10,524	1,984	1,972	544	311	467	1,427
8,187	4	281	65	0	19	949
844	464	23,661	254	84	2,620	2,083
14,006	18	983	66	26	507	1,851
528	0	48	31	11,690	0	288
1,521	4	4	11,371	10	72	88,830
21	0	0	2	3	27	18,117
2	0	0	0	0	3	2,516
998	0	1	11,079	1	6	7,824
389	1	0	9	3	13	22,566
111	3	3	281	3	23	37,807
349	51	50	221	23	554	611
0	0	0	0	0	0	188,513
8,314	122	756	3,066	500	5,242	52,397
64,917	791	8,076	7,682	13,677	5,688	26,653
326,390	15,361	24,805	67,873	114,873	87,759	302,060
71,070	809	2,548	1,333,184	3,104	42,094	10,237
43,714	1,628	6,590	393,243	8,428	6,777	350,410

1976

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	5,582581	5,571,077	4,863
7/8/9 Production and Related Workers	3,108,541	19,049	51,811
71 Miners, Quqrrymen, Well Drillers and Related Workers	44,898	12	41,549
72 Metal Processors	65,725	0	152
73 Wood Preparation Workers and Paper Makers	40,543	53	29
74 Chemical Processors and Related Workers	67,521	87	1,149
75 Spinners, Weavers, Knitters, Dyers and Related Workers	407,416	131	32
76 Tanners, Fellmongers and Pelt Dressors	2,537	0	0
77 Food and Beverage Processors	162,825	791	216
78 Tobacco Preparers and Tobacco Product Makers	12,542	49	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	329,516	11	17
80 Shoemakers and Leather Good Makers	41,449	0	0
81 Cabinet Makers and Related Wood Workers	53,635	100	2
82 Stone Cutters and Carvers	9,086	26	1,720
83 Blacksmiths, Hammersmiths and Forging Press Operators	137,927	1	88
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	188,578	234	1,200
85 Electrical Fitters and Related Electrical and Electronics Workers	158,576	36	483
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	2,347	113	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	82,928	17	183
88 Jewllery and Precious Metal Workers	7,447	1	0
89 Glass Formers, Potters and Related Workers	30,323	1	66
90 Rubber and Plastics Product Makers	100,302	0	0
91 Paper and Paperboard Products Makers	18,618	2	0
92 Printers and Related Workers	52,984	68	0
93 Painters	27,292	0	0
94 Production and Related Workers, n.e.c	136,669	147	191
95 Bricklayer, Carpenters and Construction Workers	374,975	740	141
96 Stationary Engine and Related Equipment Operators	23,928	136	308
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	41,929	794	1,493
98 Transport Equipment Operators	252,381	13,723	1,479
99 Labourers, n.e.c	233.644	1,776	1,313

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
958	24	456	1,996	575	172	2,460
2,078,679	16,638	457,662	58,205	235,144	3,654	187,699
2,822	24	448	1	0	1	41
64,600	0	388	372	21	0	192
39,366	0	842	175	2	0	76
65,287	101	86	474	5	0	332
402,638	65	313	1,110	14	0	3,113
2,527	0	0	10	0	0	0
158,162	0	104	2,900	15	6	631
12,291	0	0	0	160	0	42
315,329	0	287	11,005	2	0	2,865
38,535	0	0	1,728	0	0	1,186
50,357	10	1,710	639	113	43	661
4,351	0	2,717	78	0	0	194
134,845	97	1,136	211	328	82	1,139
129,122	760	2,029	6,977	13,755	263	34,238
119,931	9,542	7,614	8,658	4,463	257	7,592
606	0	0	191	0	0	1,437
75,029	861	4,117	285	439	34	1,963
6,173	0	0	909	0	0	364
29,851	0	109	192	12	0	92
99,473	0	67	69	39	73	581
18,151	0	56	64	4	36	305
49,961	0	69	271	25	107	2,483
7,758	10	15,245	2,755	233	0	1,291
131,996	218	841	983	202	88	2,003
20,895	1,922	342,404	2,385	952	416	5,120
13,353	1,228	3,939	1,165	833	442	2,524
8,497	270	4,972	827	21,945	78	3,053
32,535	482	4,791	5,446	181,971	1,327	10,627
44,238	1,048	63,378	8,325	9,611	401	103,554

1976

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	2,677,963	266,662	896,973	104,950
0/1 Professional, Technical and Related Workers	92,235	7,098	12,466	611
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	81,523	6,710	11,179	585
027/038 Mining Engineers and Technicians	700	0	289	7
026/037 Metallurgists and Metallurgical Technicians	6,703	0	23	0
024/035 Mechanical Engineers and Technicians	40,559	3,495	1,942	375
023/034 Electrical, Electronics Engineers and Technicians	10,524	557	772	165
025/036 Chemical Engineers and Technicians	8,187	519	1,112	10
022/033 Civil Engineers and Technicians	844	98	15	0
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	14,006	2,041	7,026	28
04 Aircraft and Ships Officers	528	4	0	12
06/07 Medical, Dental, Veterinary and Related Workers	1,521	93	282	0
061 Medical Doctors	21	0	2	0
063 Dentist	2	0	1	0
067 Pharmacists	998	0	0	0
071 Professional Nurses	389	2	273	0
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	111	91	6	0
11 Accountants	349	158	36	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	8,314	133	969	14
2. Administrarive and Managerial	64,917	5,919	13,811	2,581
3. Clerical and Related Workers	326,390	34,494	62,332	8,150
4. Sales Workers	71,070	19,197	13,613	1,901
5. Service Workers	43,714	4,339	12,325	1,144

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
130,607	341,843	114,649	103,760	600,113	118,406
7,484	10,983	5,780	12,765	34,167	881
0	0	0	0	0	0
1,975	9,576	5,568	12,635	32,880	415
0	49	273	59	23	0
154	78	0	4,122	2,303	23
914	2,054	2,790	4,682	24,178	129
371	878	513	1,902	5,347	19
54	4,499	122	1,422	429	20
24	159	245	141	128	34
458	1,859	1,625	307	472	190
4	1	8	2	497	0
16	1,021	37	29	43	0
0	9	3	6	1	0
0	1	0	0	0	0
0	935	2	21	40	0
16	65	31	1	1	0
0	11	1	1	1	0
5	12	0	0	67	71
0	0	0	0	0	0
5,484	373	167	99	680	395
6,069	11,934	2,714	1,716	17,404	2,769
25,271	79,709	12,250	11,710	83,846	8,628
7,008	17,807	1,685	532	7,469	1,858
1,995	9,695	1,649	1,639	9,900	1,028

1976

Manpower Demand by Industry'

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	958	309	251	0
7/8/9 Production and Related Workers	2,078,679	195,306	782,175	90,563
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,822	548	33	0
72 Metal Processors	64,600	59	284	137
73 Wood Preparation Workers and Paper Makers	39,366	502	115	29,469
74 Chemical Processors and Related Workers	65,287	307	754	0
75 Spinners, Weavers, Knitters, Dyers and Related Workers	402,638	156	397,886	151
76 Tanners, Fellmongers and Pelt Dressors	2,527	0	2,468	0
77 Food and Beverage Processors	158,162	157,105	689	171
78 Tobacco Preparers and Tobacco Product Makers	12,291	10,521	1,596	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	315,329	469	310,155	837
80 Shoemakers and Leather Good Makers	38,535	43	36,676	44
81 Cabinet Makers and Related Wood Workers	50,357	568	1,058	45,654
82 Stone Cutters and Carvers	4,351	0	133	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	134,845	138	863	448
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	129,122	3,799	10,508	563
85 Electrical Fitters and Related Electrical and Electronics Workers	119,931	1,060	1,769	262
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	606	0	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	75,029	353	785	334
88 Jewllery and Precious Metal Workers	6,173	0	0	163
89 Glass Formers, Potters and Related Workers	29,851	56	2	94
90 Rubber and Plastics Product Makers	99,473	2	188	4
91 Paper and Paperboard Products Makers	18,151	343	212	218
92 Printers and Related Workers	49,961	269	70	24
93 Painters	7,758	77	182	1,371
94 Production and Related Workers, n.e.c	131,996	2,257	3,041	1,276
95 Bricklayer, Carpenters and Construction Workers	20,895	390	1,493	4,302
96 Stationary Engine and Related Equipment Operators	13,353	1,829	2,475	278
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	8,497	1,658	633	747
98 Transport Equipment Operators	32,535	6,147	4,179	1,190
99 Labourers, n.e.c	44,238	6,650	3,928	2,826

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	237	25	7	90	39
82,780	211,478	90,546	75,391	447,237	103,203
0	1,476	620	39	78	28
20	429	304	39,658	23,211	498
8,947	9	0	33	232	59
66	62,144	619	160	873	364
38	2,296	87	86	258	1,680
0	3	0	0	0	56
1	91	5	0	25	75
0	174	0	0	0	0
330	1,284	20	1	382	1,851
0	1,618	0	0	29	125
31	73	225	17	732	1,999
0	0	4,127	0	57	34
251	1,843	888	13,113	116,261	1,040
911	8,580	1,364	3,780	98,980	637
317	2,048	607	1,850	111,639	379
36	0	0	0	476	94
151	2,639	418	6,683	63,400	266
0	0	25	17	215	5,753
67	477	27,195	5	1,404	551
245	96,730	40	27	155	2,082
16,989	332	2	0	3	52
48,614	332	16	92	452	92
40	1,515	101	194	3,335	943
555	2,869	36,770	163	3,046	82,019
486	1,032	5,865	1,756	5,062	509
858	3,302	435	762	3,338	76
224	1,637	1,225	952	1,220	201
1,470	8,645	3,097	2,307	5,195	575
2,133	9,900	6,491	3,966	7,179	1,165

1977

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	12,930,952	5,404,999	102,997
0/1 Professional, Technical and Related Workers	558,293	3,522	3,891
01 Physical Scientists	2,991	0	0
02/03 Architects, Engineer, and Related Technicians	145,822	758	3,798
027/038 Mining Engineers and Technicians	2,931	0	1,931
026/037 Metallurgists and Metallurgical Technicians	8,477	0	463
024/035 Mechanical Engineers and Technicians	49,370	1	522
023/034 Electrical, Electronics Engineers and Technicians	19,821	141	363
025/036 Chemical Engineers and Technicians	10,200	0	94
022/033 Civil Engineers and Technicians	34,456	158	116
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	20,567	458	309
04 Aircraft and Ships Officers	18,195	2,507	0
06/07 Medical, Dental, Veterinary and Related Workers	113,535	32	13
061 Medical Doctors	20,409	1	1
063 Dentist	2,961	0	0
067 Pharmacists	20,677	0	1
071 Professional Nurses	26,877	1	6
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	42,611	30	5
11 Accountants	2,344	5	0
13 Teacher	201,733	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	73,673	220	80
2. Administrarive and Managerial	143,055	1,054	2,306
3. Clerical and Related Workers	1,045,275	3,962	5,777
4. Sales Workers	1,550,207	1,377	244
5. Service Workers	858,786	1,149	1,022

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
2,799,976	32,995	624,997	1,967,000	478,995	202,995	1,315,998
98,551	2,474	34,018	16,873	18,319	12,823	367,732
0	0	0	0	0	0	2,991
88,511	2,319	32,744	1,364	2,643	5,385	8,300
663	0	3	0	0	0	334
7,600	0	1	1	0	10	402
43,760	87	1,347	235	1,963	464	991
12,155	1,726	2,323	627	472	614	1,400
8,774	7	309	76	0	24	916
983	466	26,612	293	169	3,434	2,225
14,576	33	2,149	132	39	839	2,032
589	0	67	36	14,689	0	307
1,506	6	10	11,976	24	185	99,783
37	0	0	4	7	70	20,289
5	0	0	0	1	7	2,948
951	0	2	11,363	2	14	8,344
380	2	1	18	7	35	26,427
133	4	7	591	7	59	41,775
355	43	55	220	28	673	965
0	0	0	0	0	0	201,733
7,590	106	1,232	3,277	935	6,580	53,653
67,997	666	9,811	7,616	17,359	7,405	28,841
342,825	13,295	29,953	71,630	136,771	114,068	326,994
75,154	680	3,071	1,400,050	3,767	54,781	11,083
46,546	1,469	7,723	404,493	11,200	8,970	376,214

1977

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	5,390,084	5,374,949	7,816
7/8/9 Production and Related Workers	3,385,252	18,986	81,941
71 Miners, Quqrrymen, Well Drillers and Related Workers	68,070	12	64,542
72 Metal Processors	74,702	0	280
73 Wood Preparation Workers and Paper Makers	42,555	50	42
74 Chemical Processors and Related Workers	70,590	82	1,710
75 Spinners, Weavers, Knitters, Dyers and Related Workers	395,107	187	47
76 Tanners, Fellmongers and Pelt Dressors	2,642	0	0
77 Food and Beverage Processors	166,080	939	318
78 Tobacco Preparers and Tobacco Product Makers	12,084	46	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	328,917	10	26
80 Shoemakers and Leather Good Makers	39,924	0	0
81 Cabinet Makers and Related Wood Workers	61,843	181	5
82 Stone Cutters and Carvers	10,768	26	2,633
83 Blacksmiths, Hammersmiths and Forging Press Operators	157,795	3	145
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	208,579	231	1,941
85 Electrical Fitters and Related Electrical and Electronics Workers	170,145	34	719
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	2,599	226	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	92,216	18	298
88 Jewllery and Precious Metal Workers	8,026	1	0
89 Glass Formers, Potters and Related Workers	33,331	1	155
90 Rubber and Plastics Product Makers	101,156	1	1
91 Paper and Paperboard Products Makers	21,044	4	2
92 Printers and Related Workers	58,477	63	1
93 Painters	32,416	0	0
94 Production and Related Workers, n.e.c	151,026	203	282
95 Bricklayer, Carpenters and Construction Workers	424,909	768	234
96 Stationary Engine and Related Equipment Operators	28,524	209	887
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	57,198	852	2,413
98 Transport Equipment Operators	295,666	13,084	3,097
99 Labourers, n.e.c	268,863	1,755	2,163

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,015	19	512	2,234	697	217	2,625
2,167,888	14,392	539,819	64,104	290,882	4,731	202,509
2,778	19	654	3	1	2	59
73,304	0	447	387	40	0	244
41,272	0	927	180	5	0	79
67,626	126	99	506	12	0	429
389,954	52	347	1,158	19	0	3,343
2,632	0	0	10	0	0	0
160,393	0	114	3,542	19	7	748
11,810	0	0	1	185	0	42
311,876	0	326	11,810	6	0	4,863
36,908	0	0	1,798	1	0	1,217
57,930	8	2,005	812	147	52	703
4,664	0	3,122	126	0	0	197
153,391	102	1,992	310	404	99	1,349
140,883	632	2,602	7,857	17,043	323	37,067
130,675	7,711	8,419	9,068	5,228	312	7,979
623	0	0	197	0	0	1,553
82,079	697	5,897	313	538	41	2,335
6,701	0	0	942	0	0	382
32,714	0	131	211	16	0	103
100,234	0	75	91	47	89	618
20,533	0	63	74	10	43	315
55,309	0	77	284	33	130	2,580
9,447	8	18,026	2,848	283	0	1,804
143,433	370	1,593	1,231	400	126	3,388
23,420	1,682	388,172	2,657	1,546	530	5,900
14,725	1,342	5,173	1,228	1,365	576	3,019
11,781	373	8,724	1,206	28,217	121	3,511
34,655	411	6,852	6,100	217,584	1,717	12,166
46,138	859	83,982	9,154	17,733	563	106,516

1977

Manpower Demand by Industry

	Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00	TOTAL	2,799,976	272,899	884,977	115,667
0/1	Professional, Technical and Related Workers	98,551	6,780	11,428	646
01	Physical Scientists	0	0	0	0
02/03	Architects, Engineer, and Related Technicians	88,511	6,412	10,317	619
027/038	Mining Engineers and Technicians	663	0	249	7
026/037	Metallurgists and Metallurgical Technicians	7,600	0	20	0
024/035	Mechanical Engineers and Technicians	43,760	3,159	1,730	373
023/034	Electrical, Electronics Engineers and Technicians	12,155	551	741	168
025/036	Chemical Engineers and Technicians	8,774	483	1,014	10
022/033	Civil Engineers and Technicians	983	89	20	1
021, 028, 029, 031, 032, 039,	Other Engineers and Technicians	14,576	2,130	6,543	60
04	Aircraft and Ships Officers	589	7	0	12
06/07	Medical, Dental, Veterinary and Related Workers	1,506	101	250	1
061	Medical Doctors	37	1	4	0
063	Dentist	5	0	2	0
067	Pharmacists	951	0	0	0
071	Professional Nurses	380	3	234	1
062, 064, 065, 066, 068, 069, 072-079	Other Medical Workers	133	97	10	0
11	Accountants	355	141	31	0
13	Teacher	0	0	0	0
05, 08, 09, 12-19	Other Professional, Technical and Related Workers	7,590	119	830	14
2.	Administrarive and Managerial	67,997	5,986	14,872	2,689
3.	Clerical and Related Workers	342,825	36,232	66,297	8,565
4.	Sales Workers	75,154	20,277	14,408	2,014
5.	Service Workers	46,546	4,421	13,665	1,232

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
141,456	352,876	122,880	122,112	655,273	131,836
6,927	11,444	6,073	14,952	39,040	1,261
0	0	0	0	0	0
2,156	10,068	5,853	14,800	37,649	637
0	48	271	64	24	0
157	77	0	4,686	2,628	32
953	2,064	2,781	5,331	27,178	191
406	899	559	2,288	6,511	32
62	4,923	140	1,616	478	48
28	163	268	208	157	49
550	1,894	1,834	607	673	285
8	2	16	4	540	0
20	999	40	40	55	0
0	18	3	9	2	0
0	3	0	0	0	0
0	871	3	28	49	0
19	85	33	2	3	0
1	22	1	1	1	0
5	12	0	0	71	95
0	0	0	0	0	0
4,738	363	164	108	725	529
6,413	12,401	2,837	1,657	18,025	3,117
26,236	82,852	12,901	12,148	88,553	9,041
7,415	18,245	1,870	584	8,328	2,013
2,190	10,060	1,611	1,660	10,592	1,115

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,015	332	254	0
7/8/9 Production and Related Workers	2,167,888	198,871	764,053	100,521
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,778	521	30	0
72 Metal Processors	73,304	57	261	144
73 Wood Preparation Workers and Paper Makers	41,272	477	105	30,529
74 Chemical Processors and Related Workers	67,626	313	706	1
75 Spinners, Weavers, Knitters, Dyers and Related Workers	389,954	158	384,503	158
76 Tanners, Fellmongers and Pelt Dressors	2,632	0	2,566	0
77 Food and Beverage Processors	160,393	159,340	631	177
78 Tobacco Preparers and Tobacco Product Makers	11,810	10,188	1,455	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	311,876	459	306,024	897
80 Shoemakers and Leather Good Makers	36,908	41	34,583	46
81 Cabinet Makers and Related Wood Workers	57,930	552	977	52,419
82 Stone Cutters and Carvers	4,664	1	122	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	153,391	149	860	738
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	140,883	3,848	10,890	612
85 Electrical Fitters and Related Electrical and Electronics Workers	130,675	1,016	1,648	278
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	623	0	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	82,079	357	741	419
88 Jewllery and Precious Metal Workers	6,701	0	1	169
89 Glass Formers, Potters and Related Workers	32,714	54	4	99
90 Rubber and Plastics Product Makers	100,234	4	191	10
91 Paper and Paperboard Products Makers	20,533	332	338	233
92 Printers and Related Workers	55,309	257	74	27
93 Painters	9,447	78	266	1,741
94 Production and Related Workers, n.e.c	143,433	3,589	4,175	1,422
95 Bricklayer, Carpenters and Construction Workers	23,420	394	1,386	4,495
96 Stationary Engine and Related Equipment Operators	14,725	1,887	2,375	329
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	11,781	1,976	1,022	963
98 Transport Equipment Operators	34,655	6,218	4,130	1,451
99 Labourers, n.e.c	46,138	6,605	3,989	3,164

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	252	26	7	100	44
92,275	217,622	97,562	91,104	490,635	115,245
0	1,420	653	45	80	29
24	447	322	47,313	24,201	535
9,805	19	0	38	237	62
79	64,331	637	213	904	442
43	2,816	115	97	269	1,795
0	6	0	0	0	60
2	133	5	0	26	79
0	167	0	0	0	0
349	1,642	22	2	404	2,077
0	2,049	1	0	31	157
49	92	236	33	865	2,707
0	0	4,446	0	59	36
286	1,945	1,089	15,857	130,544	1,923
1,052	9,540	1,542	4,695	107,888	816
338	2,055	648	2,685	121,536	471
38	0	0	0	487	98
164	2,655	498	7,946	68,961	338
0	0	26	19	230	6,256
72	493	29,885	13	1,471	623
261	95,617	44	35	193	3,879
19,198	344	5	1	6	76
53,853	342	29	105	486	136
55	1,502	117	239	3,893	1,556
724	4,223	37,090	279	4,114	87,817
515	1,112	7,503	2,016	5,295	704
955	3,690	604	1,197	3,588	100
433	2,453	1,535	1,311	1,697	391
1,664	8,685	3,808	2,409	5,561	729
2,316	9,844	6,702	4,556	7,609	1,353

1978

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	13,490,947	5,180,998	106,999
0/1 Professional, Technical and Related Workers	618,460	3,548	4,025
01 Physical Scientists	3,283	0	0
02/03 Architects, Engineer, and Related Technicians	168,301	830	3,909
027/038 Mining Engineers and Technicians	3,018	0	2,039
026/037 Metallurgists and Metallurgical Technicians	9,570	0	446
024/035 Mechanical Engineers and Technicians	54,752	1	513
023/034 Electrical, Electronics Engineers and Technicians	23,218	143	359
025/036 Chemical Engineers and Technicians	11,216	0	96
022/033 Civil Engineers and Technicians	42,071	173	135
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	24,456	513	321
04 Aircraft and Ships Officers	19,919	2,388	0
06/07 Medical, Dental, Veterinary and Related Workers	128,414	36	20
061 Medical Doctors	23,154	1	1
063 Dentist	3,505	0	0
067 Pharmacists	22,071	0	2
071 Professional Nurses	31,735	1	10
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	47,949	34	7
11 Accountants	2,813	5	0
13 Teacher	218,549	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	77,181	289	96
2. Administrarive and Managerial	158,058	1,090	2,422
3. Clerical and Related Workers	1,142,313	3,996	6,109
4. Sales Workers	1,697,208	1,396	257
5. Service Workers	930,844	150	997

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
3,016,971	35,995	820,998	2,147,995	522,995	221,999	1,435,997
108,561	2,801	44,814	18,766	21,007	14,024	400,914
0	0	0	0	0	0	3,283
98,817	2,629	42,559	1,697	3,143	6,106	8,611
651	0	6	0	0	0	322
8,721	0	2	1	0	11	389
48,358	97	1,820	288	2,196	494	985
14,364	1,883	3,042	740	626	676	1,385
9,723	12	377	92	0	26	890
1,175	581	33,221	346	268	3,774	2,398
15,825	56	4,091	230	53	1,125	2,242
666	0	102	44	16,388	0	331
1,552	12	20	13,147	42	304	113,281
54	0	0	6	12	115	22,965
9	0	0	0	1	11	3,484
933	0	5	12,138	3	24	8,966
391	4	2	30	13	57	31 227
165	8	13	973	13	97	46,639
368	45	68	228	30	683	1,386
0	0	0	0	0	0	218,549
7,158	115	2,065	3,650	1,404	6,931	55,473
73,448	705	13,250	7,871	19,574	8,103	31,595
371,083	14,452	40,213	78,801	144,682	124,599	358,378
81,956	719	4,114	1,532,644	4,062	59,912	12,148
51,127	1,664	10,061	433,716	13,223	9,977	408,929

1978

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6 Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	5,167,446	5,151,018	8,236
7/8/9 Production and Related Workers	3,776,618	18,800	84,953
71 Miners, Quqrrymen, Well Drillers and Related Workers	69,652	12	65,699
72 Metal Processors	85,645	0	331
73 Wood Preparation Workers and Paper Makers	45,507	46	41
74 Chemical Processors and Related Workers	75,442	75	1,663
75 Spinners, Weavers, Knitters, Dyers and Related Workers	396,086	242	46
76 Tanners, Fellmongers and Pelt Dressors	2,835	0	0
77 Food and Beverage Processors	174,861	1,080	307
78 Tobacco Preparers and Tobacco Product Makers	11,963	42	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	339,746	10	25
80 Shoemakers and Leather Good Makers	39,779	0	0
81 Cabinet Makers and Related Wood Workers	72,912	260	8
82 Stone Cutters and Carvers	12,172	26	2,640
83 Blacksmiths, Hammersmiths and Forging Press Operators	184,332	4	157
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	232,931	227	2,057
85 Electrical Fitters and Related Electrical and Electronics Workers	188,684	32	699
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	2,895	335	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	105,642	19	318
88 Jewllery and Precious Metal Workers	8,825	2	0
89 Glass Formers, Potters and Related Workers	37,529	2	212
90 Rubber and Plastics Product Makers	105,404	1	2
91 Paper and Paperboard Products Makers	24,229	6	2
92 Printers and Related Workers	65,780	58	1
93 Painters	41,158	1	0
94 Production and Related Workers, n.e.c	170,102	258	272
95 Bricklayer, Carpenters and Construction Workers	530,766	791	255
96 Stationary Engine and Related Equipment Operators	35,053	280	1,334
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	73,173	904	2,555
98 Transport Equipment Operators	319,281	12,365	3,997
99 Labourers, n.e.c	324,234	1,722	2,332

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,110	19	640	2,607	750	231	2,835
2,329,686	15,635	707,906	73,590	319,697	5,153	221,198
2,809	20	1,023	4	2	3	80
83,958	0	571	419	60	0	306
44,007	0	1,130	192	8	0	83
72,266	179	128	564	20	0	547
390,407	53	425	1,255	23	0	3,635
2,823	0	0	11	0	0	1
167,950	0	140	4,465	22	7	890
11,688	0	0	1	189	0	43
318,842	0	412	13,201	9	0	7,247
36,573	0	0	1,943	2	0	1,261
67,982	8	2,615	1,058	170	53	758
5,130	0	3,985	191	0	0	200
177,979	130	3,468	445	443	101	1,605
157,364	658	3,686	9,218	18,761	332	40,628
145,766	7,788	10,303	9,873	5,423	317	8,483
651	0	0	210	0	0	1,699
91,730	705	9,097	359	585	42	2,787
7,404	0	0	1,014	0	0	405
36,765	0	174	241	19	0	116
104,379	0	93	121	51	90	667
23,664	0	78	89	16	44	330
62,434	0	95	310	39	133	2,710
11,672	8	23,696	3,056	304	1	2,420
158,716	599	2,878	1,583	605	150	5,041
26,809	1,849	488,451	3,085	2,104	567	6,855
16,737	1,761	7,475	1,345	1,869	632	3,620
15,831	556	15,189	1,723	32,189	153	4,073
38,006	440	10,561	7,121	230,871	1,867	14,053
49,344	881	122,233	10,493	25,913	661	110,655

1978

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	3,016,971	288,468	903,020	130,219
0/1 Professional, Technical and Related Workers	108,561	6,729	10,843	704
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	98,817	6,365	9,854	676
027/038 Mining Engineers and Technicians	651	0	221	7
026/037 Metallurgists and Metallurgical Technicians	8,721	0	18	0
024/035 Mechanical Engineers and Technicians	48,358	2,957	1,593	383
023/034 Electrical, Electronics Engineers and Technicians	14,364	566	735	176
025/036 Chemical Engineers and Technicians	9,723	467	957	11
022/033 Civil Engineers and Technicians	1,175	84	26	1
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	15,825	2,291	6,304	98
04 Aircraft and Ships Officers	666	11	0	12
06/07 Medical, Dental, Veterinary and Related Workers	1,552	114	230	2
061 Medical Doctors	54	1	6	0
063 Dentist	9	0	3	0
067 Pharmacists	933	1	1	0
071 Professional Nurses	391	6	206	1
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	165	106	14	1
11 Accountants	368	130	27	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	7,158	109	732	14
2. Administrarive and Managerial	73,448	6,246	16,489	2,876
3. Clerical and Related Workers	371,083	39,275	72,607	9,244
4. Sales Workers	81,956	22,102	15,703	2,192
5. Service Workers	51,127	4,648	15,600	1,363

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
157,120	375,590	135,155	144,580	732,966	149,853
6,640	12,334	6,596	17,686	45,346	1,683
0	0	0	0	0	0
2,382	10,951	6,359	17,503	43,819	908
0	49	277	71	26	0
161	78	1	5,372	3,048	43
1,003	2,141	2,856	6,123	31,040	262
450	952	629	2,777	8,030	49
72	5,563	165	1,853	542	93
33	173	303	296	194	65
663	1,995	2,128	1,011	939	396
11	3	27	7	595	0
25	1,005	45	57	72	2
0	27	4	12	4	0
1	4	0	1	0	0
0	833	3	36	59	0
23	107	36	5	6	1
1	34	2	3	3	1
4	12	0	0	77	118
0	0	0	0	0	0
4,218	363	165	119	783	655
6,985	13,266	3,037	1,648	19,262	3,639
28,077	88,663	13,914	12,979	96,502	9,822
8,087	19,246	2,124	660	9,581	2,261
2,477	10,747	1,612	1,732	11,694	1,254

1978

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & To-bacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	3,016,971	288,468	903,020	130,219
0/1 Professional, Technical and Related Workers	108,561	6,729	10,843	704
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	98,817	6,365	9,854	676
027/038 Mining Engineers and Technicians	651	0	221	7
026/037 Metallurgists and Metallurgical Technicians	8,721	0	18	0
024/035 Mechanical Engineers and Technicians	48,358	2,957	1,593	383
023/034 Electrical, Electronics Engineers and Technicians	14,364	586	735	166
025/036 Chemical Engineers and Technicians	9,723	467	957	11
022/033 Civil Engineers and Technicians	1,175	84	26	1
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	15,825	2,291	6,304	98
04 Aircraft and Ships Officers	666	11	0	12
06/07 Medical, Dental, Veterinary and Related Workers	1,552	114	230	2
061 Medical Doctors	54	1	6	0
063 Dentist	9	0	3	0
067 Pharmacists	933	1	1	0
071 Professional Nurses	391	6	206	1
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	165	106	14	1
11 Accountants	368	130	27	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	7,158	109	732	14
2. Administrative and Managerial	73,448	6,246	16,489	2,876
3. Clerical and Related Workers	371,083	39,275	72,607	9,244
4. Sales Workers	81,956	2,102	15,703	2,192
5. Service Workers	51,127	4,648	15,600	1,363

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
157,120	375,590	135,155	144,580	732,966	149,853
6,640	12,334	6,596	17,686	45,346	1,683
0	0	0	0	0	0
2,382	10,951	6,359	17,503	43,819	908
0	49	277	71	26	0
161	78	1	5,372	3,048	43
1,003	2,141	2,856	6,123	31,040	262
450	952	629	2,777	8,030	49
72	5,563	165	1,853	542	93
33	173	303	296	194	65
663	1,995	2,128	1,011	939	396
11	3	27	7	595	0
25	1,005	45	57	72	2
0	27	4	12	4	0
1	4	0	1	0	0
0	833	3	36	59	0
23	107	36	5	6	1
1	34	2	3	3	1
4	12	0	0	77	118
0	0	0	0	0	0
4,218	363	165	119	783	655
6,985	13,266	3,037	1,648	19,262	3,639
28,077	88,663	13,914	12,979	96,502	9,822
8,087	19,246	2,124	660	9,581	2,261
2,477	10,747	1,612	1,332	11,694	1,254

1978

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,110	368	265	0
7/8/9 Production and Related Workers	2,329,686	209,100	771,513	113,840
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,809	509	28	0
72 Metal Processors	83,958	56	246	155
73 Wood Preparation Workers and Paper Makers	44,007	466	98	32,106
74 Chemical Processors and Related Workers	72,266	329	681	2
75 Spinners, Weavers, Knitters, Dyers and Related Workers	390,407	165	384,056	169
76 Tanners, Fellmongers and Pelt Dressors	2,823	1	2,749	0
77 Food and Beverage Processors	167,950	166,868	593	186
78 Tobacco Preparers and Tobacco Product Makers	11,688	10,159	1,364	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	318,842	463	312,100	980
80 Shoemakers and Leather Good Makers	36,573	41	33,666	49
81 Cabinet Makers and Related Wood Workers	67,982	552	929	61,343
82 Stone Cutters and Carvers	5,130	1	114	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	177,979	166	886	1,108
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	157,364	4,025	11,628	679
85 Electrical Fitters and Related Electrical and Electronics Workers	145,766	1,002	1,582	302
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	651	0	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	91,730	374	722	530
88 Jewllery and Precious Metal Workers	7,404	0	1	177
89 Glass Formers, Potters and Related Workers	36,765	54	5	107
90 Rubber and Plastics Product Makers	104,379	7	200	16
91 Paper and Paperboard Products Makers	23,664	330	474	253
92 Printers and Related Workers	62,434	253	80	31
93 Painters	11.672	81	357	2,220
94 Production and Related Workers, n.e.c	158,716	5,132	5,432	1,616
95 Bricklayer, Carpenters and Construction Workers	26,809	411	1,326	4,773
96 Stationary Engine and Related Equipment Operators	16,737	2,010	2,356	395
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	15,831	2,381	1,440	1,241
98 Transport Equipment Operators	38,006	6,494	4,219	1,789
99 Labourers, n.e.c	49,344	6,770	4,181	3,613

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	275	28	8	115	51
104,854	231,059	107,844	109,867	550,466	131,143
0	1,402	704	51	84	31
29	481	350	56,321	25,735	585
10,951	31	0	42	247	66
96	68,708	671	282	954	543
49	3,471	151	109	286	1,951
0	9	0	0	0	64
3	183	6	0	27	84
0	165	0	0	0	0
376	2,084	25	3	437	2,374
1	2,582	1	0	33	200
73	117	254	54	1,040	3,620
0	0	4,913	0	62	40
331	2,116	1,350	19,136	149,831	3,055
1,236	10,884	1,785	5,816	120,263	1,048
367	2,126	710	3,780	135,306	591
40	0	0	0	507	104
181	2,754	604	9,426	76,708	431
0	0	27	22	250	6,927
78	527	33,680	23	1,574	717
284	97,353	49	44	242	6,184
22,112	368	8	2	10	107
60,815	364	44	120	535	192
74	1,535	139	294	4,630	2,342
942	5,832	38,204	435	5,482	95,641
553	1,235	9,602	2,303	5,651	955
1,082	4,228	817	1,776	3,943	130
700	3,419	1,934	1,775	2,307	634
1,920	8,998	4,730	2,843	6,084	929
2,561	10,087	7,086	5,210	8,238	1,598

1979

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	13,663,915	4,886,997	110,995
0/1 Professional, Technical and Related Workers	687,409	3,520	4,157
01 Physical Scientists	3,762	0	0
02/03 Architects, Engineer, and Related Technicians	180,839	891	4,016
027/038 Mining Engineers and Technicians	3,085	0	2,148
026/037 Metallurgists and Metallurgical Technicians	10,228	0	427
024/035 Mechanical Engineers and Technicians	57,426	1	502
023/034 Electrical, Electronics Engineers and Technicians	25,529	142	354
025/036 Chemical Engineers and Technicians	11,803	0	97
022/033 Civil Engineers and Technicians	45,012	186	156
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	27,756	562	332
04 Aircraft and Ships Officers	20,962	2,230	0
06/07 Medical, Dental, Veterinary and Related Workers	149,612	41	27
061 Medical Doctors	27,350	1	1
063 Dentist	4,317	0	0
067 Pharmacists	22,964	0	2
071 Professional Nurses	38,963	2	14
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	56,018	38	10
11 Accountants	3,287	4	0
13 Teacher	247,308	3	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	81,642	354	114
2 Administrative and Managerial	168,737	1,108	2,539
3 Clerical and Related Workers	1,217,091	3,967	6,450
4 Sales Workers	1,728,758	1,393	270
5 Service Workers	990,773	1,133	971

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
3,125,963	36,389	927,734	2,180,219	546,489	212,358	1,636,771
113,744	2,934	50,644	19,392	23,041	13,411	456,566
0	0	0	0	0	0	3,762
104,729	2,759	47,578	1,939	3,572	6,046	9,309
606	0	9	0	0	0	322
9,397	0	2	2	0	10	390
50,574	100	2,112	323	2,338	457	1,019
16,048	1,900	3,426	801	785	650	1,423
10,274	16	393	102	1	24	896
1,332	665	35,610	374	381	3,619	2,689
16,498	78	6,026	337	67	1,286	2,570
707	0	130	49	17,473	0	373
1,517	17	29	13,408	61	386	134,126
68	1	0	8	17	146	27,108
12	0	0	1	2	14	4,288
867	0	7	12,035	5	30	10,017
385	5	2	40	18	73	38,424
185	11	20	1,323	19	123	54,289
361	43	70	217	30	603	1,959
0	0	0	0	0	0	247,303
6,430	115	2,837	3,779	1,905	6,376	59,732
76,425	691	15,393	7,560	21,111	7,755	36,155
389,411	14,555	46,441	80,562	146,383	119,049	410,273
87,048	704	4,740	1,559,191	4,189	57,315	13,908
54,541	1,747	11,276	432,174	14,931	9,707	464,293

1979

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,875,127	4,857,562	8,665
7/8/9 Production and Related Workers	3,996,020	18,314	87,943
71 Miners, Quqrrymen, Well Drillers and Related Workers	70,968	12	66,756
72 Metal Processors	92,835	0	385
73 Wood Preparation Workers and Paper Makers	46,091	41	39
74 Chemical Processors and Related Workers	77,579	68	1,607
75 Spinners, Weavers, Knitters, Dyers and Related Workers	382,572	290	43
76 Tanners, Fellmongers and Pelt Dressors	2,915	0	0
77 Food and Beverage Processors	177,105	1,198	293
78 Tobacco Preparers and Tobacco Product Makers	11,362	38	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	338,499	9	24
80 Shoemakers and Leather Good Makers	38,232	0	0
81 Cabinet Makers and Related Wood Workers	81,610	332	11
82 Stone Cutters and Carvers	12,905	26	2,640
83 Blacksmiths, Hammersmiths and Forging Press Operators	204,989	5	170
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	251,986	219	2,176
85 Electrical Fitters and Related Electrical and Electronics Workers	199,067	29	676
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	3,230	435	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	115,051	20	339
88 Jewllery and Precious Metal Workers	9,246	2	0
89 Glass Formers, Potters and Related Workers	40,403	2	274
90 Rubber and Plastics Product Makers	105,762	1	2
91 Paper and Paperboard Products Makers	26,572	7	3
92 Printers and Related Workers	70,715	52	1
93 Painters	47,092	1	0
94 Production and Related Workers, n.e.c	182,680	307	260
95 Bricklayer, Carpenters and Construction Workers	574,779	800	277
96 Stationary Engine and Related Equipment Operators	40,526	345	1,809
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	87,709	940	2,700
98 Transport Equipment Operators	330,942	11,472	4,951
99 Labourers, n.e.c	372,598	1,663	2,507

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,183	18	688	2,827	771	215	3,198
2,403,611	15,740	798,552	78,513	336,063	4,906	252,378
2,719	18	1,340	6	3	4	110
90,926	0	629	420	80	0	395
44,543	0	1,177	189	11	0	91
74,217	223	141	583	28	0	712
376,329	49	446	1,260	27	0	4,128
2,903	0	0	11	0	0	1
169,150	0	146	5,189	24	6	1,099
11,094	0	0	2	183	0	45
313,826	0	447	13,703	13	1	10,476
34,926	0	0	1,943	2	0	1,361
75,978	8	2,932	1,262	187	47	853
5,402	0	4,371	254	0	0	212
196,682	151	4,877	570	464	88	1,982
167,880	634	4,468	10,046	19,752	298	46,513
155,308	7,245	10,792	9,961	5,362	280	9,414
646	0	0	207	0	1	1,941
97,756	657	11,800	382	609	37	3,451
7,786	0	0	1,010	0	0	448
39,512	0	199	257	21	0	138
104,630	0	100	147	52	79	751
25,958	0	83	100	23	38	360
67,119	0	100	313	43	118	2,969
13,666	8	26,796	3,033	313	1	3,274
167,056	802	4,137	1,870	610	156	7,282
29,261	1,883	527,772	3,328	2,638	531	8,289
18,261	2,078	9,211	1,367	2,352	605	4,498
19,636	712	21,364	2,199	35,074	166	4,918
39,985	437	13,690	7,723	234,001	1,776	16,907
50,456	835	151,534	11,178	33,991	674	119,760

1979

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	3,125,963	292,848	889,686	139,450
0/1 Professional, Technical and Related Workers	113,744	6,389	9,803	731
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	104,729	6,046	8,969	703
027/038 Mining Engineers and Technicians	606	0	186	6
026/037 Metallurgists and Metallurgical Technicians	9,397	1	16	0
024/035 Mechanical Engineers and Technicians	50,574	2,638	1,396	372
023/034 Electrical, Electronics Engineers and Technicians	16,048	555	693	176
025/036 Chemical Engineers and Technicians	10,274	431	860	11
022/033 Civil Engineers and Technicians	1,332	76	29	2
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	16,498	2,345	5,789	136
04 Aircraft and Ships Officers	707	14	0	12
06/07 Medical, Dental, Veterinary and Related Workers	1,517	119	200	2
061 Medical Doctors	68	1	6	0
063 Dentist	12	0	3	0
067 Pharmacists	867	1	1	0
071 Professional Nurses	385	8	174	1
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	185	109	16	1
11 Accountants	361	114	23	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	6,430	96	611	14
2. Administrarive and Managerial	76,425	6,230	17,842	2,882
3. Clerical and Related Workers	389,411	40,688	77,602	9,347
4. Sales Workers	87,048	23,024	16,701	2,234
5. Service Workers	54,541	4,671	17,380	1,413

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
166,918	396,353	141,435	160,525	778,417	160,331
6,080	12,680	6,822	19,612	49,599	2,028
0	0	0	0	0	0
2,469	11,360	6,581	19,409	48,027	1,165
0	47	268	72	27	0
154	75	1	5,770	3,329	51
987	2,113	2,786	6,588	33,372	322
468	961	673	3,158	9,296	68
78	5,988	184	1,991	579	152
37	175	325	384	226	78
745	2,001	2,344	1,446	1,198	494
14	4	37	11	615	0
29	960	46	70	88	3
1	35	4	14	7	0
1	5	0	1	1	1
0	754	3	42	66	0
25	123	36	8	9	1
2	43	3	5	5	1
4	11	0	0	78	131
0	0	0	0	0	0
3,564	345	158	122	791	729
7,315	14,868	2,996	1,495	19,151	3,646
28,890	99,404	13,829	12,647	97,845	9,159
8,480	21,270	2,224	681	10,255	2,179
2,694	12,028	1,486	1,647	12,011	1,211

1979

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,183	390	269	0
7/8/9 Production and Related Workers	2,403,611	211,456	750,089	122,843
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,719	475	25	0
72 Metal Processors	90,926	53	222	158
73 Wood Preparation Workers and Paper Makers	44,543	435	88	31,981
74 Chemical Processors and Related Workers	74,217	333	631	3
75 Spinners, Weavers, Knitters, Dyers and Related Workers	376,329	166	369,304	170
76 Tanners, Fellmongers and Pelt Dressors	2,903	1	2,825	0
77 Food and Beverage Processors	169,150	168,077	535	186
78 Tobacco Preparers and Tobacco Product Makers	11,094	9,715	1,224	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	313,826	449	306,433	1,019
80 Shoemakers and Leather Good Makers	34,926	38	31,512	50
81 Cabinet Makers and Related Wood Workers	75,978	530	848	68,328
82 Stone Cutters and Carvers	5,402	1	102	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	196,682	177	878	1,490
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	167,880	4,049	11,920	716
85 Electrical Fitters and Related Electrical and Electronics Workers	155,308	947	1,459	311
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	646	0	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	97,756	376	676	632
88 Jewllery and Precious Metal Workers	7,786	0	1	177
89 Glass Formers, Potters and Related Workers	39,512	51	7	110
90 Rubber and Plastics Product Makers	104,630	9	201	24
91 Paper and Paperboard Products Makers	25,958	315	590	262
92 Printers and Related Workers	67,119	239	84	34
93 Painters	13,666	81	434	2,664
94 Production and Related Workers, n.e.c	167,056	6,562	6,463	1,750
95 Bricklayer, Carpenters and Construction Workers	29,261	412	1,219	4,807
96 Stationary Engine and Related Equipment Operators	18,261	2,059	2,249	450
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	19,636	2,714	1,796	1,502
98 Transport Equipment Operators	39,985	6,523	4,149	2,088
99 Labourers, n.e.c	50,456	6,669	4,214	3,931

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	314	28	8	124	50
113,459	235,789	114,050	124,435	589,432	142,058
0	1,324	727	54	83	31
33	496	365	62,953	26,039	607
11,643	42	0	44	244	66
111	70,529	675	347	957	631
53	4,033	185	115	289	2,014
0	12	0	0	0	65
4	230	6	0	27	85
0	155	0	0	0	0
384	2,475	27	5	450	2,584
1	3,051	2	0	33	239
98	138	262	78	1,189	4,507
0	1	5,195	0	61	42
365	2,211	1,582	21,688	164,043	4,248
1,382	11,876	1,972	6,761	127,940	1,264
379	2,113	745	4,895	143,760	699
40	0	0	0	502	104
190	2,744	694	10,499	81,429	516
0	0	28	24	260	7,296
81	541	36,299	35	1,602	786
293	95,095	53	53	286	8,616
24,247	378	11	3	14	138
65,392	371	60	128	562	249
94	1,504	156	339	5,238	3,156
1,149	7,328	37,445	605	6,798	98,956
565	1,315	11,538	2,463	5,741	1,201
1,168	4,632	1,022	2,389	4,133	159
982	4,321	2,297	2,230	2,902	892
2,109	8,953	5,552	3,149	6,349	1,113
2,696	9,921	7,152	5,578	8,501	1,794

1980

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	13,842,928	4,904,996	114,832
0/1 Professional, Technical and Related Workers	702,017	3,718	4,283
01 Physical Scientists	3,837	0	0
02/03 Architects, Engineer, and Related Technicians	187,144	1,014	4,115
027/038 Mining Engineers and Technicians	3,108	0	2,255
026/037 Metallurgists and Metallurgical Technicians	10,694	0	405
024/035 Mechanical Engineers and Technicians	59,173	2	489
023/034 Electrical, Electronics Engineers and Technicians	27,332	149	348
025/036 Chemical Engineers and Technicians	12,192	0	98
022/033 Civil Engineers and Technicians	44,168	212	177
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	30,477	651	343
04 Aircraft and Ships Officers	21,984	2,208	0
06/07 Medical, Dental, Veterinary and Related Workers	156,879	48	36
061 Medical Doctors	28,744	2	2
063 Dentist	4,719	0	0
067 Pharmacists	22,592	0	3
071 Professional Nurses	42,533	3	18
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	58,291	43	13
11 Accountants	3,636	4	0
13 Teacher	249,012	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	79,525	444	132
2. Administrarive and Managerial	173,955	1,198	2,655
3. Clerical and Related Workers	1,245,897	4,190	6,792
4. Sales Workers	1,749,353	1,478	284
5. Service Workers	995,914	1,187	943

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
3,202,376	36,803	941,317	2,195,805	566,777	219,874	1,660,148
118,027	3,081	51,394	19,886	25,068	13,884	462,676
0	0	0	0	0	0	3,837
109,758	2,901	47,753	2,179	4,022	6,474	8,928
557	0	12	0	0	0	284
9,929	0	3	2	1	10	344
52,179	104	2,198	357	2,455	455	934
17,671	1,915	3,464	849	966	676	1,294
10,775	22	366	111	1	23	796
1,486	757	34,205	397	515	3,748	2,671
17,161	103	7,505	463	84	1,562	2,605
735	0	148	54	18,464	0	375
1,477	23	37	13,567	83	499	141,109
83	1	0	10	24	189	28,433
15	0	0	1	2	18	4,683
795	0	9	11,831	7	39	9,908
382	7	3	51	25	94	41,950
202	15	25	1,674	25	159	56,135
346	42	66	204	30	572	2,372
0	0	0	0	0	0	249,012
5,711	115	3,390	3,882	2,469	6,339	57,043
78,730	677	16,057	7,204	22,585	8,033	36,816
402,415	14,660	48,155	81,710	146,910	123,115	417,950
90,562	689	4,905	1,573,634	4,286	59,346	14,169
57,340	1,834	11,346	427,228	16,724	10,222	469,090

1980

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,892,504	4,874,241	9,091
7/8/9 Production and Related Workers	4,083,288	18,984	90,784
71 Miners, Quqrrymen, Well Drillers and Related Workers	71,933	13	67,616
72 Metal Processors	98,351	0	441
73 Wood Preparation Workers and Paper Makers	45,618	39	37
74 Chemical Processors and Related Workers	78,949	64	1,541
75 Spinners, Weavers, Knitters, Dyers and Related Workers	366,219	358	41
76 Tanners, Fellmongers and Pelt Dressors	2,965	0	0
77 Food and Beverage Processors	177,832	1,393	277
78 Tobacco Preparers and Tobacco Product Makers	10,659	36	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	333,902	9	23
80 Shoemakers and Leather Good Makers	36,348	0	0
81 Cabinet Makers and Related Wood Workers	89,442	426	14
82 Stone Cutters and Carvers	13,093	27	2,629
83 Blacksmiths, Hammersmiths and Forging Press Operators	223,419	7	182
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	263,618	225	2,294
85 Electrical Fitters and Related Electrical and Electronics Workers	205,261	28	648
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	3,366	564	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	121,882	21	359
88 Jewllery and Precious Metal Workers	9,479	3	0
89 Glass Formers, Potters and Related Workers	42,870	3	338
90 Rubber and Plastics Product Makers	105,184	2	3
91 Paper and Paperboard Products Makers	28,602	9	4
92 Printers and Related Workers	74,459	50	1
93 Painters	50,009	1	0
94 Production and Related Workers, n.e.c	191,739	375	247
95 Bricklayer, Carpenters and Construction Workers	561,710	860	299
96 Stationary Engine and Related Equipment Operators	44,762	431	2,310
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	100,151	1,035	2,844
98 Transport Equipment Operators	338,075	11,297	5,952
99 Labourers, n.e.c	393,391	1,708	2,684

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,237	17	664	3,041	787	216	3,210
2,454,065	15,845	808,796	83,102	350,417	5,058	256,237
2,595	17	1,545	8	3	5	131
96,324	0	621	416	101	0	448
44,161	0	1,094	183	15	0	89
75,490	267	140	598	36	0	813
359,905	45	417	1,251	30	0	4,172
2,953	0	0	11	0	0	1
168,851	0	136	5,943	26	6	1,200
10,404	0	0	2	175	0	42
306,438	0	435	14,101	17	1	12,878
33,123	0	0	1,920	3	0	1,302
83,463	7	2,953	1,477	204	44	854
5,615	0	4,302	321	0	0	199
213,709	171	5,917	703	482	84	2,164
176,493	610	4,838	10,856	20,629	288	47,385
163,067	6,696	10,089	9,938	5,238	267	9,290
626	0	0	201	0	1	1,974
102,539	608	13,510	403	629	35	3,778
8,042	0	0	993	0	0	441
41,887	0	204	271	23	0	144
104,029	0	96	174	53	75	752
27,985	0	79	111	30	36	348
70,949	1	94	314	47	113	2,890
15,661	7	27,205	2,969	320	1	3,845
172,701	1,008	5,092	2,171	1,025	174	8,946
31,429	1,917	511,020	3,562	2,195	537	8,891
19,702	2,400	10,119	1,375	2,856	628	4,941
23,446	870	25,922	2,710	37,863	193	5,268
41,606	434	15,665	8,307	234,934	1,828	18,052
50,872	787	167,303	11,813	42,483	742	114,999

1980

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	3,202,376	293,041	868,965	147,551
0/1 Professional, Technical and Related Workers	118,027	6,041	8,783	752
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	109,758	5,719	8,088	725
027/038 Mining Engineers and Technicians	557	0	153	6
026/037 Metallurgists and Metallurgical Technicians	9,929	1	13	0
024/035 Mechanical Engineers and Technicians	52,179	2,334	1,211	357
023/034 Electrical, Electronics Engineers and Technicians	17,671	542	647	174
025/036 Chemical Engineers and Technicians	10,775	397	766	11
022/033 Civil Engineers and Technicians	1,486	68	32	2
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	17,161	2,377	5,266	175
04 Aircraft and Ships Officers	735	17	0	11
06/07 Medical, Dental, Veterinary and Related Workers	1,477	124	173	3
061 Medical Doctors	83	2	7	0
063 Dentist	15	0	4	0
067 Pharmacists	795	1	1	0
071 Professional Nurses	382	10	144	2
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	202	111	17	1
11 Accountants	346	98	19	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	5,711	83	503	13
2. Administrarive and Managerial	78,730	6,020	18,893	2,948
3. Clerical and Related Workers	402,415	40,842	81,167	9,645
4. Sales Workers	90,562	23,240	17,383	2,324
5. Service Workers	57,340	4,547	18,949	1,494

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
174,634	410,117	146,510	174,840	815,978	170,740
5,519	12,940	7,003	21,317	53,331	2,341
0	0	0	0	0	0
2,503	11,696	6,758	21,096	51,748	1,425
0	44	256	72	26	0
143	71	1	6,067	3,575	58
949	2,065	2,686	6,941	35,259	377
476	961	714	3,518	10,550	89
83	6,390	203	2,094	606	225
39	175	346	478	258	88
813	1,990	2,552	1,926	1,474	588
16	5	47	15	623	1
29	906	49	85	103	5
1	41	5	17	10	0
1	6	0	2	1	1
0	672	3	47	71	0
25	136	37	12	14	2
2	51	4	7	7	2
3	10	0	0	77	139
0	0	0	0	0	0
2,968	323	149	121	780	771
7,538	15,998	2,967	1,382	18,951	4,033
29,247	107,000	13,796	12,554	98,735	9,429
8,749	22,569	2,337	716	10,925	2,319
2,883	12,925	1,376	1,597	12,279	1,290

1980

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,237	400	268	0
7/8/9 Production and Related Workers	2,454,065	211,951	723,522	130,388
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,595	437	22	0
72 Metal Processors	96,324	50	198	157
73 Wood Preparation Workers and Paper Makers	44,161	399	78	31,119
74 Chemical Processors and Related Workers	75,490	333	579	3
75 Spinners, Weavers, Knitters, Dyers and Related Workers	359,905	165	352,282	168
76 Tanners, Fellmongers and Pelt Dressors	2,953	1	2,872	0
77 Food and Beverage Processors	168,851	167,796	475	181
78 Tobacco Preparers and Tobacco Product Makers	10,404	9,177	1,083	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	306,438	430	298,473	1,040
80 Shoemakers and Leather Good Makers	33,123	36	29,219	49
81 Cabinet Makers and Related Wood Workers	83,463	502	764	74,791
82 Stone Cutters and Carvers	5,615	2	90	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	213,709	187	864	1,894
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	176,493	4,037	12,090	743
85 Electrical Fitters and Related Electrical and Electronics Workers	163,067	882	1,330	314
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	626	0	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	102,539	375	628	734
88 Jewllery and Precious Metal Workers	8,042	0	2	172
89 Glass Formers, Potters and Related Workers	41,887	48	9	111
90 Rubber and Plastics Product Makers	104,029	11	200	31
91 Paper and Paperboard Products Makers	27,985	296	694	266
92 Printers and Related Workers	70,949	222	86	37
93 Painters	15,661	81	501	3,113
94 Production and Related Workers, n.e.c	172,701	7,954	7,375	1,864
95 Bricklayer, Carpenters and Construction Workers	31,429	410	1,107	4,739
96 Stationary Engine and Related Equipment Operators	19,702	2,090	2,130	504
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	23,440	3,027	2,115	1,767
98 Transport Equipment Operators	41,606	6.495	4,048	2,384
99 Labourers, n.e.c	50,872	6,508	4,208	4,207

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	346	27	9	132	55
120,698	238,339	119,004	137,265	621,625	151,273
0	1,229	740	56	81	30
37	508	374	68,521	25,860	619
12,167	53	0	45	236	64
125	71,710	667	413	942	718
56	4,573	219	117	286	2,039
0	15	0	0	0	65
5	276	6	0	27	85
0	144	0	0	0	0
385	2,853	29	7	456	2,765
1	3,504	2	0	33	279
124	158	265	104	1,333	5,422
0	1	5,419	0	60	43
396	2,288	1,812	28,941	176,804	5,523
1,517	12,783	2,146	7,650	134,044	1,483
383	2,079	770	6,077	150,424	808
39	0	0	0	485	102
195	2,707	783	11,386	85,128	603
0	0	28	25	266	7,549
82	550	38,588	49	1,603	847
296	91,825	57	62	331	11,216
26,136	385	14	4	19	171
69,128	376	77	133	582	308
114	1,458	173	380	5,821	4,020
1,360	8,799	35,987	791	8,147	100,424
564	1,384	13,483	1,557	5,728	1,457
1,240	5,002	1,231	3,051	4,266	188
1,284	5,208	2,659	2,703	3,515	1,168
2,277	8,819	6,368	3,395	6,521	1,299
2,787	9,652	7,107	5,798	8,627	1,978

1981

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	14,298,935	4,895,999	117,579
0/1 Professional, Technical and Related Workers	735,492	3,901	4,366
01 Physical Scientists	3,980	0	0
02/03 Architects, Engineer, and Related Technicians	203,168	1,137	4,172
027/038 Mining Engineers and Technicians	3,145	0	2,341
026/037 Metallurgists and Metallurgical Technicians	11,624	0	378
024/035 Mechanical Engineers and Technicians	63,581	2	470
023/034 Electrical, Electronics Engineers and Technicians	30,490	152	337
025/036 Chemical Engineers and Technicians	13,220	0	98
022/033 Civil Engineers and Technicians	46,075	238	197
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	35,033	745	351
04 Aircraft and Ships Officers	22,973	2,165	0
06/07 Medical, Dental, Veterinary and Related Workers	167,202	55	44
061 Medical Doctors	30,682	3	2
063 Dentist	5,232	0	0
067 Pharmacists	22,591	0	4
071 Professional Nurses	47,109	3	22
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	61,588	49	16
11 Accountants	4,065	4	0
13 Teacher	254,999	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	79,105	540	150
2. Administrarive and Managerial	185,254	1,289	2,748
3. Clerical and Related Workers	1,308,249	4,402	7,078
4. Sales Workers	1,807,075	1,561	295
5. Service Workers	1,021,681	1,237	906

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
3,434,985	37,186	1,029,895	2,255,153	585,153	230,376	1,712,609
128,439	3,224	56,234	20,790	27,130	14,544	476,864
0	0	0	0	0	0	3,980
120,487	3,041	51,671	2,478	4,498	7,005	8,679
538	0	15	0	0	0	251
10,923	0	4	3	1	9	306
56,270	107	2,463	398	2,549	456	866
20,323	1,923	3,776	908	1,173	709	1,189
11,870	27	366	123	1	23	712
1,734	855	35,350	424	672	3,918	2,687
18,829	129	9,697	622	102	1,890	2,668
793	0	179	60	19,394	0	382
1,512	29	50	13,993	108	628	150,783
103	1	1	13	31	238	30,290
17	0	1	1	3	23	5,187
760	0	11	11,844	9	49	9,914
402	9	4	63	32	118	46,456
230	19	33	2,072	33	200	58,936
346	40	65	194	29	545	2,842
0	0	0	0	0	0	254.999
5,301	114	4,269	4,065	3,101	6,366	55,199
84,909	663	18,060	6,998	24,037	8,421	38,129
435,124	14,751	53,840	84,495	146,682	128,840	433,037
98,586	674	5,472	1,619,261	4,362	62,181	14,682
63,156	1,924	12,310	430,595	18,635	10,893	482.025

1981

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,883,164	4,864,033	9,439
7/8/9 Production and Related Workers	4,358,020	19,576	92,747
71 Miners, Quqrrymen, Well Drillers and Related Workers	72,435	14	67,753
72 Metal Processors	108,073	0	495
73 Wood Preparation Workers and Paper Makers	46,840	37	34
74 Chemical Processors and Related Workers	84,039	61	1,454
75 Spinners, Weavers, Knitters, Dyers and Related Workers	367,731	427	38
76 Tanners, Fellmongers and Pelt Dressors	3,157	0	0
77 Food and Beverage Processors	186,973	1,592	257
78 Tobacco Preparers and Tobacco Product Makers	10,432	34	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	344,910	9	22
80 Shoemakers and Leather Good Makers	36,195	0	0
81 Cabinet Makers and Related Wood Workers	102,093	524	17
82 Stone Cutters and Carvers	13,866	28	2,588
83 Blacksmiths, Hammersmiths and Forging Press Operators	253,602	9	193
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	285,211	230	2,392
85 Electrical Fitters and Related Electrical and Electronics Workers	220,232	28	611
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	3,566	698	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	134,829	23	377
88 Jewllery and Precious Metal Workers	10,075	4	0
89 Glass Formers, Potters and Related Workers	47,463	4	403
90 Rubber and Plastics Product Makers	109,726	2	3
91 Paper and Paperboard Products Makers	32,052	12	5
92 Printers and Related Workers	81,599	47	2
93 Painters	56,182	1	0
94 Production and Related Workers, n.e.c	209,038	445	230
95 Bricklayer, Carpenters and Construction Workers	588,652	918	319
96 Stationary Engine and Related Equipment Operators	51,134	521	2,812
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	116,732	1,130	2,964
98 Transport Equipment Operators	347,656	11,033	6,939
99 Labourers, n.e.c	433,527	1,745	2,839

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,353	15	691	3,335	800	220	3,278
2,623,418	15,935	883,288	89,679	363,507	5,276	264,594
2,583	16	1,894	11	4	6	154
105,867	0	660	418	123	0	510
45,396	0	1,087	180	18	0	88
80,461	312	150	624	45	0	932
361,225	41	419	1,259	34	0	4,288
3,145	0	0	11	0	0	1
176,727	0	136	6,900	28	6	1,327
10,191	0	0	3	165	0	39
314,006	0	456	14,782	21	1	15,613
33,004	0	0	1,924	4	0	1,263
95,461	6	3,206	1,746	221	42	870
6,097	0	4,562	403	0	0	188
241,842	192	7,530	867	498	79	2,392
193,611	585	5,626	11,957	21,433	280	49,097
178,655	6,132	10,099	10,070	5,067	255	315
627	0	0	198	0	1	2,042
112,115	558	16,457	434	646	34	4,185
8,639	0	0	990	0	0	442
46,360	0	226	292	24	0	154
108,524	0	98	208	54	171	766
31,415	0	81	125	38	34	342
78,120	1	95	319	51	109	2,855
18,614	6	29,782	2,944	325	2	4,508
185,766	1,215	6,545	2,550	1,251	195	10,841
35,185	1,950	532,396	3,887	3,775	550	9,672
22,230	2,723	11,913	1,405	3,382	660	5,488
28,723	1,029	32,987	3,337	40,615	223	5,724
45,301	430	19,073	9,107	234,312	1,905	19,556
53,528	739	197,810	12,728	51,373	823	111,942

1981

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	3,434,985	307,861	891,516	162,549
0/1 Professional, Technical and Related Workers	128,439	6,017	8,240	815
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	120,487	5,696	7,639	786
027/038 Mining Engineers and Technicians	538	0	132	6
026/037 Metallurgists and Metallurgical Technicians	10,923	1	12	0
024/035 Mechanical Engineers and Technicians	56,270	2,165	1,097	357
023/034 Electrical, Electronics Engineers and Technicians	20,323	556	632	180
025/036 Chemical Engineers and Technicians	11,870	384	714	12
022/033 Civil Engineers and Technicians	1,734	64	35	3
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	18,829	2,526	5,017	228
04 Aircraft and Ships Officers	793	20	0	11
06/07 Medical, Dental, Veterinary and Related Workers	1,512	136	156	5
061 Medical Doctors	103	2	8	1
063 Dentist	17	0	4	0
067 Pharmacists	760	2	1	0
071 Professional Nurses	402	14	125	2
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	230	118	18	2
11 Accountants	346	89	16	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	5,301	76	429	13
2. Administrarive and Managerial	84,909	6,126	20,971	3,115
3. Clerical and Related Workers	435,124	43,170	88,993	10,283
4. Sales Workers	98,586	24,701	18,966	2,498
5. Service Workers	63,156	4,662	21,657	1,633

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
190,835	443,314	158,621	197,651	893,555	189,083
5,261	13,875	7,550	24,113	59,797	2,771
0	0	0	0	0	0
2,635	12,653	7,289	23,862	58,144	1,783
0	43	256	74	27	0
137	70	2	6,632	4,003	66
944	2,114	2,707	7,604	38,831	451
502	1,010	795	4,076	12,453	119
91	7,154	234	2,289	662	330
44	185	386	609	306	102
917	2,077	2,909	2,578	1,862	715
18	6	61	20	656	1
33	891	54	106	124	7
1	49	6	21	15	0
1	7	0	3	1	1
1	622	3	53	78	0
27	153	40	18	20	3
3	60	5	11	10	3
3	10	0	0	78	150
0	0	0	0	0	0
2,572	315	146	125	795	830
8,134	17,857	3,069	1,344	19,712	4,581
31,007	119,476	14,376	13,116	104,733	9,970
9,452	24,842	2,566	792	12,234	2,535
3,231	14,407	1,330	1,629	13,194	1,413

1981

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & To-bacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6 Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,353	432	280	0
7/8/9 Production and Related Workers	2,623,418	222,753	732,409	144,205
71 Miners, Quarrymen, Well Drillers and Related Workers	2,583	418	20	0
72 Metal Processors	105,867	49	184	163
73 Wood Preparation Workers and Paper Makers	45,396	382	72	31,290
74 Chemical Processors and Related Workers	80,461	330	556	4
75 Spinners, Weavers, Knitters, Dyers and Related Workers	361,225	172	352,620	172
76 Tanners, Fellmongers and Pelt Dressors	3,145	1	3,057	0
77 Food and Beverage Processors	176,727	175,640	440	182
78 Tobacco Preparers and Tobacco Product Makers	10,191	9,056	996	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	314,006	432	305,070	1,105
80 Shoemakers and Leather Good Makers	33,004	34	28,387	51
81 Cabinet Makers and Related Wood Workers	95,461	497	719	85,221
82 Stone Cutters and Carvers	6,097	2	83	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	241,842	206	891	2,440
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	193,611	4,221	12,838	803
85 Electrical Fitters and Related Electrical and Electronics Workers	178,655	857	1,269	330
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	627	0	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	112,115	392	610	881
88 Jewllery and Precious Metal Workers	8,639	0	2	173
89 Glass Formers, Potters and Related Workers	46,360	46	10	116
90 Rubber and Plastics Product Makers	108,524	14	209	41
91 Paper and Paperboard Products Makers	31,415	292	828	281
92 Printers and Related Workers	78,120	215	93	41
93 Painters	18,614	84	592	3,758
94 Production and Related Workers, n.e.c	185,766	9,805	8,620	2,069
95 Bricklayer, Carpenters and Construction Workers	35,185	427	1,052	4,839
96 Stationary Engine and Related Equipment Operators	22,230	2,224	2,115	586
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	28,723	3,504	2,528	2,146
98 Transport Equipment Operators	45 301	6,780	4,143	2,822
99 Labourers, n.e.c	53,528	6,653	4,405	4,691

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro. coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) Fust metallurgic ind.	(38) Machinery	(39) Others
0	394	28	10	147	62
133,750	212,461	129,702	136,647	683,738	167,751
0	1,187	786	60	81	31
43	344	401	77,143	26,684	636
13,239	67	0	46	236	64
147	76,402	687	307	961	847
62	5,370	267	123	295	2,144
0	20	0	0	0	67
7	338	6	0	27	87
0	139	0	0	0	0
400	3,395	33	9	481	3,081
2	4,156	3	0	35	336
159	188	281	140	1,553	6,703
0	1	5,905	0	61	45
447	2,480	2,151	27,340	198,654	7,233
1,734	14,365	2,435	8,950	146,468	1,797
403	2,141	832	7,708	164,149	966
39	0	0	0	485	103
210	2,796	917	12,770	92,811	728
0	0	29	26	283	8,126
86	585	42,832	67	1,667	951
312	92,714	63	75	395	14,701
29,339	411	18	6	25	215
76,114	399	99	142	627	390
142	1,479	200	442	6,728	5,189
1,660	10,794	35,860	1,044	10,037	105,877
585	1,525	16,269	2,735	5,941	1,812
1,371	5,638	1,521	3,957	4,589	229
1,689	6,407	3,183	3,361	4,367	1,538
2,560	9,097	7,567	3,785	6,980	1,567
3,000	9,825	7,357	6,211	9,118	2,268

1982

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining	(3) Manufact.
00 TOTAL	14,125,950	4,837,000	120,166	3.580,776
0/1 Professional, Technical and Related Workers	796,752	4,055	4,443	135,934
01 Physical Scientists	4,382	0	0	0
02/03 Architects, Engineers, and Related Technicians	217,109	1,259	4,223	128,504
027/038 Mining Engineers and Technicians	3,179	0	2,425	502
026/037 Metallurgists and Metallurgical Technicians	12,271	0	350	11,616
024/035 Mechanical Engineers and Technicians	66,508	3	449	58,856
023/034 Electrical, Electronics Engineers and Technicians	33,418	152	326	22,654
025/036 Chemical Engineers and Technicians	14,064	0	98	12,742
022/033 Civil Engineers and Technicians	47,923	263	217	1,956
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	39,746	841	358	20,178
04 Aircraft and Ships Officers	23,812	2,090	0	828
06/07 Medical, Dental, Veterinary and Related Workers	187,821	63	52	1,511
061 Medical Doctors	34,678	4	2	121
063 Dentist	6,139	0	0	22
067 Pharmacists	23,084	0	5	703
071 Professional Nurses	55,188	5	26	413
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	68,732	54	19	252
11 Accountants	4,703	4	0	331
13 Teacher	277,143	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	81,782	639	168	4,760
2. Administrative and Managerial	197,032	1,373	2,838	89,071
3. Clerical and Related Workers	1,306,310	4,576	7,361	456,665
4. Sales Workers	1,861,549	1,631	306	103,963
5. Service Workers	1,076,228	1,276	869	67,591

and Occupation

(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
37,718	1,122,269	2,312,860	599,956	240,027	1,875,178
3,389	61,280	21,698	29,146	15,150	521,657
0	0	0	0	0	4,382
3,203	55,678	2,795	4,989	7,531	8,927
0	19	0	0	0	233
0	5	4	1	9	286
111	2,745	441	2,607	450	846
1,935	4,098	959	1,404	738	1,152
33	362	134	2	23	670
965	36,301	448	852	4,065	2,856
159	12,148	809	123	2,246	2,884
0	213	67	20,200	0	414
34	64	14,404	135	762	170,796
1	1	15	39	289	34,206
0	1	1	4	28	6,083
0	15	11,824	11	59	10,467
11	5	76	40	143	54,469
22	42	2,488	41	243	65,571
38	64	182	29	511	3,544
0	0	0	0	0	277,143
114	5,261	4,250	3,793	6,346	56,451
651	20,230	6,788	25,391	8,778	41,912
14,894	59,951	87,236	145,350	134,073	476,204
662	6,080	1,663,566	4,406	64,788	16,147
2,025	13,302	433,300	20,609	11,543	525,713

1982

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining	(3) Manufact.
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,824,294	4,804,114	9,782	1,435
7/8/9 Production and Related Workers	4,583,785	19,975	94,567	2,726,117
71 Miners, Ouqrrymen, Well Drillers and Related Workers	72,745	14	67,730	2,487
72 Metal Processors	114,691	0	550	112,267
73 Wood Preparation Workers and Paper Makers	46,344	34	31	44,926
74 Chemical Processors and Related Workers	87,179	56	1,359	83,419
75 Spinners, Weavers, Knitters, Dyers and Related Workers	360,128	496	35	353,169
76 Tanners, Fellmongers and Pelt Dressors	3,266	0	0	3,253
77 Food and Beverage Processors	191,723	1,784	236	180,025
78 Tobacco Preparers and Tobacco Product Makers	9,900	31	0	9,673
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	349,045	8	21	313,409
80 Shoemakers and Leather Good Makers	35,284	0	0	32,071
81 Cabinet Makers and Related Wood Workers	113,001	621	20	105,626
82 Stone Cutters and Carvers	14,491	29	2,539	6,425
83 Blacksmiths, Hammersmiths and Forging Press Operators	279,065	10	205	264,856
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	305,143	233	2,489	205,863
85 Electrical Fitters and Related Electrical and Electronics Workers	231,017	26	571	189,724
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	3,870	831	0	604
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	145,465	25	394	118,730
88 Jewllery and Precious Metal Workers	10,427	4	0	8,976
89 Glass Formers, Potters and Related Workers	51,001	4	469	49,766
90 Rubber and Plastics Product Makers	111,559	3	4	110,259
91 Paper and Paperboard Products Makers	34,799	14	6	34,124
92 Printers and Related Workers	86,868	43	2	83,258
93 Painters	62,556	2	0	21,326
94 Production and Related Workers, n.e.c	221,858	515	212	193,204
95 Bricklayer, Carpenters and Construction Workers	612,856	969	339	38,144
96 Stationary Engine and Related Equipment Operators	57,714	609	3,328	24,354
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	134,202	1,217	3,082	33,670
98 Transport Equipment Operators	355,748	10,632	7,950	47,923
99 Labourers, n.e.c	481,840	1,765	2,995	54,586

and Occupation (continue)

(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
14	716	3,652	806	223	3,552
16,083	960,710	96,620	374,248	5,472	289,993
15	2,283	13	5	7	191
0	699	417	146	0	612
0	1,065	174	22	0	92
358	160	649	54	0	1,124
38	415	1,260	38	0	4,677
0	0	11	0	0	2
0	134	7,958	30	6	1,550
0	0	4	153	0	39
0	475	15,458	25	1	19,648
0	0	1,914	5	0	1,294
6	3,466	2,045	237	40	940
0	4,813	496	1	0	188
213	9,352	1,051	510	74	2,794
562	6,491	13,142	22,101	270	53,992
5,582	9,984	10,145	4,839	241	9,905
0	0	192	1	1	2,241
510	19,751	467	658	32	4,898
0	1	978	0	0	468
0	249	313	26	0	174
0	100	246	54	66	827
0	82	140	45	32	356
1	95	322	55	104	2,988
6	32,471	2,892	327	2	5,530
1,429	8,190	2,971	1,481	217	13,639
1,990	551,121	4,233	4,361	560	11,139
3,060	13,894	1,430	3,913	688	6,438
1,194	40,967	4,040	43,193	254	6,585
427	22,882	9,967	231,558	1,973	22,436
692	231,570	13,692	60,410	904	115,226

1982

Manpower Demand by Industry

	Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00	TOTAL	3,580,776	314,143	891,278	173,357
0/1	Professional, Technical and Related Workers	135,934	5,846	7,500	859
01	Physical Scientists	0	0	0	0
02/03	Architects, Engineer, and Related Technicians	128,504	5,537	6,998	829
027/038	Mining Engineers and Technicians	502	0	109	6
026/037	Metallurgists and Metallurgical Technicians	11,616	1	10	0
024/035	Mechanical Engineers and Technicians	58,856	1,949	963	346
023/034	Electrical, Electronics Engineers and Technicians	22,654	557	598	181
025/036	Chemical Engineers and Technicians	12,742	362	646	12
022/033	Civil Engineers and Technicians	1,956	58	37	4
021, 028, 029, 031, 032, 039,	Other Engineers and Technicians	20,178	2,610	4,635	280
04	Aircraft and Ships Officers	828	22	0	11
06/07	Medical, Dental, Veterinary and Related Workers	1,511	143	137	6
061	Medical Doctors	121	3	8	1
063	Dentist	22	0	4	0
067	Pharmacists	703	2	1	0
071	Professional Nurses	413	17	105	3
062, 064, 065, 066, 068, 069, 072-079	Other Medical Workers	252	121	19	2
11	Accountants	331	78	13	0
13	Teacher	0	0	0	0
05, 08, 09, 12-19	Other Professional, Technical and Related Workers	4,760	66	352	13
2.	Administrarive and Managerial	89,071	6,015	22,578	3,179
3.	Clerical and Related Workers	436,663	44,032	94,627	10,589
4.	Sales Workers	103,963	25,335	20,068	2,593
5.	Service Workers	67,591	4,612	24,004	1,724

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
201,858	464,521	166,916	215,476	950,022	203,205
4,878	14,498	7,921	26,368	64,924	3,140
0	0	0	0	0	0
2,674	13,336	7,651	26,090	63,260	2,129
0	41	247	73	26	0
125	67	2	6,999	4,340	72
901	2,102	2,644	8,043	41,394	514
511	1,033	860	4,562	14,201	151
97	7,795	262	2,417	699	452
47	189	419	740	351	111
993	2,109	3,217	3,256	2,249	829
20	8	75	25	666	1
36	848	56	130	144	11
2	54	6	26	20	1
2	8	0	5	2	1
1	555	3	58	82	1
27	164	41	25	27	4
4	67	6	16	13	4
2	10	0	0	76	152
0	0	0	0	0	0
2,146	296	139	123	778	847
8,468	19,193	3,115	1,262	20,087	5,177
31,716	128,460	14,696	13,228	108,833	10,484
9,833	26,329	2,763	843	13,421	2,756
3,494	15,463	1,263	1,604	13,890	1,538

1982

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & To-bacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,435	451	283	0
7/8/9 Production and Related Workers	2,726,117	227,852	722,221	154,413
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,487	385	18	0
72 Metal Processors	112,267	46	165	163
73 Wood Preparation Workers and Paper Makers	44,926	351	64	30,157
74 Chemical Processors and Related Workers	83,419	358	519	6
75 Spinners, Weavers, Knitters, Dyers and Related Workers	353,169	175	343,779	170
76 Tanners, Fellmongers and Pelt Dressors	3,253	1	3,162	0
77 Food and Beverage Processors	180,025	178,935	393	176
78 Tobacco Preparers and Tobacco Product Makers	9,673	8,661	884	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	313,409	420	303,714	1,134
80 Shoemakers and Leather Good Makers	32,071	32	26,817	50
81 Cabinet Makers and Related Wood Workers	105,626	478	656	93,936
82 Stone Cutters and Carvers	6,425	2	74	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	264,856	221	895	2,982
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	205,863	4,294	13,251	840
85 Electrical Fitters and Related Electrical and Electronics Workers	189,724	804	1,175	335
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	604	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	118,730	399	577	1,018
88 Jewllery and Precious Metal Workers	8,976	0	2	167
89 Glass Formers, Potters and Related Workers	49,766	44	12	117
90 Rubber and Plastics Product Makers	110,259	17	213	52
91 Paper and Paperboard Products Makers	34,124	278	941	286
92 Printers and Related Workers	83,258	201	97	44
93 Painters	21,326	85	667	4,361
94 Production and Related Workers, n.e.c	193,204	11,509	9,638	2,223
95 Bricklayer, Carpenters and Construction Workers	38,144	434	969	4,751
96 Stationary Engine and Related Equipment Operators	24,354	2,304	2,046	658
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	33,670	3,915	2,875	2,502
98 Transport Equipment Operators	47,923	6,887	4,131	3,221
99 Labourers, n.e.c	54,306	6,615	4,487	5,064

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, *chemical products,* petro, coal, rubber & plastic products	(36) *Non-metal,* petr. and coal products	(37) First metallurgic ind	(38) Machinery	(39) Others
0	432	28	10	162	69
143,449	260,146	137,131	172,159	728,705	180,041
0	1,105	809	61	79	30
49	567	416	83,627	26,563	671
13,938	81	0	46	227	62
166	79,183	684	595	944	964
66	6,076	312	123	293	2,175
0	24	0	0	0	66
9	395	6	0	26	85
0	128	0	0	0	0
401	3,882	35	11	490	3,322
2	4,741	4	0	35	390
194	214	288	177	1,748	7,935
0	1	6,242	0	59	47
488	2,613	2,460	30,068	216,176	8,953
1,915	15,651	2,676	10,077	155,066	2,093
409	2,144	872	9,320	173,554	1,111
38	0	0	0	465	100
218	2,809	1,037	13,790	98,038	844
0	0	29	27	292	8,459
88	607	46,105	86	1,675	1,032
316	90,843	68	87	455	18,208
31,872	427	23	7	31	259
81,113	412	121	145	655	470
169	1,456	223	494	7,518	6,353
1,944	12,641	34,360	1,302	11,844	107,743
584	1,632	18,864	2,805	5,948	2,157
1,467	6,160	1,798	4,871	4,781	269
2,096	7,519	3,668	3,998	5,187	1,910
2,786	9,122	8,882	4,062	7,234	1,818
3,121	9,713	7,369	6,380	9,322	2,515

1983

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining	(3) Manufact.
00 TOTAL	15,181,943	4,749,997	122,620	3,726,015
0/1 Professional, Technical and Related Workers	871,880	4,186	4,512	143,664
01 Physical Scientists	4,899	0	0	0
02/03 Architects, Engineer, and Related Technicians	231,818	1,381	4,266	136,755
027/038 Mining Engineers and Technicians	3,210	0	2,506	464
026/037 Metallurgists and Metallurgical Technicians	12,889	1	320	12,279
024/035 Mechanical Engineers and Technicians	69,326	4	427	61,328
023/034 Electrical, Electronics Engineers and Technicians	36,557	148	314	25,146
025/036 Chemical Engineers and Technicians	14,968	0	97	13,676
022/033 Civil Engineers and Technicians	49,815	289	238	2,195
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	45,053	939	364	21,667
04 Aircraft and Ships Officers	24,550	1,993	0	858
06/07 Medical, Dental, Veterinary and Related Workers	213,903	70	60	1,506
061 Medical Doctors	39,739	5	3	138
063 Dentist	7,294	0	0	26
067 Pharmacists	23,696	0	5	644
071 Professional Nurses	65,498	6	30	427
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	77,676	59	22	271
11 Accountants	5,503	3	0	313
13 Teacher	305,884	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	85,323	739	186	4,232
2. Administrarive and Managerial	210,226	1,453	2,926	93,319
3. Clerical and Related Workers	1,477,254	4,729	7,643	478,317
4. Sales Workers	1,918,674	1,694	317	109,590
5. Service Workers	1,144,264	1,309	833	72,230

and Occupation

(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
38,254	1,223,960	2,373,392	612,582	249,979	2,085,144
3,563	66,831	22,659	31,156	15,775	579,534
0	0	0	0	0	4,899
3,373	60,035	3,138	5,501	8,083	9,286
0	24	0	0	0	216
0	6	6	1	9	267
115	3,058	486	2,633	440	835
1,943	4,451	1,003	1,661	766	1,125
40	355	145	2	22	631
1,084	37,211	469	1,057	4,205	3,067
191	14,930	1,029	147	2,641	3,145
0	253	74	20,917	0	455
42	78	14,832	164	908	196,243
2	1	18	47	343	39,182
0	1	1	5	33	7,228
0	18	11,795	13	71	11,150
13	6	90	49	171	64,706
27	52	2,928	50	290	73,977
35	62	169	27	473	4,421
0	0	0	0	0	305,884
113	6,403	4,446	4,647	6,311	58,346
639	22,678	6,586	26,692	9,146	46,787
15,034	66,809	90,099	143,344	139,459	531,820
650	6,761	1,709,723	4,430	67,474	18,035
2,130	14,385	436,184	22,684	12,226	582,283

1983

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining	(3) Manufact.
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,737,712	4,716,367	10,121	1,524
7/8/9 Production and Related Workers	4,821,933	20,259	96,268	2,827,371
71 Miners, Ouqrrymen, Well Drillers and Related Workers	72,975	15	67,574	2,377
72 Metal Processors	120,765	0	606	118,097
73 Wood Preparation Workers and Paper Makers	45,315	30	29	43,933
74 Chemical Processors and Related Workers	90,357	51	1,259	86,369
75 Spinners, Weavers, Knitters, Dyers and Related Workers	352,803	564	32	345,290
76 Tanners, Fellmongers and Pelt Dressors	3,371	0	0	3,358
77 Food and Beverage Processors	196,563	1,970	214	183,238
78 Tobacco Preparers and Tobacco Product Makers	9,341	28	0	9,130
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	354,193	8	19	312,793
80 Shoemakers and Leather Good Makers	34,440	0	0	31,203
81 Cabinet Makers and Related Wood Workers	124,365	717	23	116,167
82 Stone Cutters and Carvers	15,127	30	2,482	6,748
83 Blacksmiths, Hammersmiths and Forging Press Operators	305,473	12	216	288,416
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	326,455	234	2,584	217,946
85 Electrical Fitters and Related Electrical and Electronics Workers	241,620	25	528	200,610
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	4,219	963	0	571
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	156,517	26	412	125,108
88 Jewllery and Precious Metal Workers	10,732	5	0	9,263
89 Glass Formers, Potters and Related Workers	54,591	5	536	53,211
90 Rubber and Plastics Product Makers	113,416	3	5	111,994
91 Paper and Paperboard Products Makers	37,577	16	7	36,856
92 Printers and Related Workers	92,040	39	2	88,253
93 Painters	69,605	2	0	24,212
94 Production and Related Workers, n.e.c	234,662	583	193	199,626
95 Bricklayer, Carpenters and Construction Workers	637,169	1,015	359	41,159
96 Stationary Engine and Related Equipment Operators	64,945	697	3,857	26,587
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	153,360	1,300	3,197	38,904
98 Transport Equipment Operators	363,752	10,148	8,984	50,572
99 Labourers, n.e.c	536,185	1,773	3,150	55,400

and Occupation (continue)

4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
13	742	4,001	809	226	3,909
16,225	1,045,754	104,140	383,467	5,673	322,776
14	2,729	16	6	8	236
0	740	414	168	0	740
0	1,033	167	26	0	97
405	170	675	64	0	1,364
34	407	1,253	41	0	5,182
0	0	11	0	0	2
0	131	9,142	31	5	1,832
0	0	5	140	0	38
0	494	16,155	30	1	24,693
0	0	1,891	5	0	1,341
5	3,751	2,381	252	37	1,032
0	5,078	600	1	0	188
235	11,444	1,259	521	68	3,302
538	7,471	14,445	22,681	258	60,298
5,019	9,780	10,175	4,572	225	10,686
0	0	184	1	1	2,499
460	23,514	502	667	30	5,798
0	1	959	0	0	504
0	274	337	28	0	200
0	102	289	54	61	908
0	83	157	53	30	375
1	94	325	59	98	3,169
5	35,430	2,815	328	2	6,811
1,646	10,080	3,443	1,715	239	17,137
2,030	569,492	4,612	4,955	570	12,997
3,402	16,145	1,451	4,451	719	7,636
1,362	50,132	4,833	45,669	287	7,676
425	27,235	10,909	227,547	2,044	26,088
644	269,944	14,735	69,602	990	119,947

1983

Manpower Demand by Industry

	Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00	TOTAL	3,726,015	321,118	891,286	184,105
0/1	Professional, Technical and Related Workers	143,664	5,696	6,782	901
01	Physical Scientists	0	0	0	0
02/03	Architects, Engineer, and Related Technicians	136,755	5,396	6,369	873
027/038	Mining Engineers and Technicians	464	0	88	5
026/037	Metallurgists and Metallurgical Technicians	12,279	1	9	0
024/035	Mechanical Engineers and Technicians	61,328	1,747	838	332
023/034	Electrical, Electronics Engineers and Technicians	25,146	559	562	182
025/036	Chemical Engineers and Technicians	13,676	342	580	13
022/033	Civil Engineers and Technicians	2,195	53	38	4
021, 028, 029, 031, 032, 039,	Other Engineers and Technicians	21,667	2,694	4,254	337
04	Aircraft and Ships Officers	858	25	0	10
06/07	Medical, Dental, Veterinary and Related Workers	1,506	151	119	6
061	Medical Doctors	138	4	8	1
063	Dentist	26	0	4	0
067	Pharmacists	644	3	1	0
071	Professional Nurses	427	20	87	3
062, 064, 065, 066, 068, 069, 072-079	Other Medical Workers	271	124	19	2
11	Accountants	313	67	10	0
13	Teacher	0	0	0	0
05, 08, 09, 12-19	Other Professional, Technical and Related Workers	4,232	57	284	12
2.	Administrarive and Managerial	93,319	5,957	24,203	3,256
3.	Clerical and Related Workers	478,317	45,299	100,210	10,943
4.	Sales Workers	109,590	26,208	21,148	2,701
5.	Service Workers	72,230	4,602	26,498	1,826

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
212,743	485,146	175,142	233,100	1,006,189	217,186
4,508	15,143	8,311	28,662	70,147	3,514
0	0	0	0	0	0
2,685	14,051	8,031	28,358	68,489	2,503
0	39	237	70	25	0
112	63	3	7,333	4,682	76
849	2,081	2,567	8,448	43,890	576
515	1,055	930	5,074	16,081	188
101	8,481	291	2,533	735	600
49	194	454	886	399	118
1,059	2,138	3,549	4,014	2,677	945
21	9	90	32	669	2
36	799	60	153	168	14
2	58	7	30	27	1
2	9	0	6	3	2
1	488	3	62	85	1
27	172	43	34	36	5
4	72	7	21	17	5
2	9	0	0	73	152
0	0	0	0	0	0
1,764	275	130	119	748	843
8,802	20,483	3,159	1,182	20,457	3,820
32,390	137,143	15,016	13,313	113,033	10,970
10,255	27,708	2,974	900	14,715	2,981
3,772	16,480	1,196	1,576	14,614	1,666

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,524	474	285	0
7/8/9 Production and Related Workers	2,827,371	232,882	712,160	164,478
71 Miners, Quarrymen, Well Drillers and Related Workers	2,377	351	16	0
72 Metal Processors	118,097	43	147	161
73 Wood Preparation Workers and Paper Makers	43,933	319	56	28,557
74 Chemical Processors and Related Workers	86,369	366	482	7
75 Spinners, Weavers, Knitters, Dyers and Related Workers	345,290	178	335,110	165
76 Tanners, Fellmongers and Pelt Dressers	3,358	2	3,263	0
77 Food and Beverage Processors	183,238	182,142	348	167
78 Tobacco Preparers and Tobacco Product Makers	9,130	8,237	775	0
79 Tailors, Dressmakers, Sewers, Upholsterers and Related Workers	312,793	408	302,332	1,156
80 Shoemakers and Leather Good Makers	31,203	30	25,285	49
81 Cabinet Makers and Related Wood Workers	116,167	457	594	102,917
82 Stone Cutters and Carvers	6,748	3	65	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	288,416	236	898	3,571
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	217,946	4,365	13,650	873
85 Electrical Fitters and Related Electrical and Electronics Workers	200,610	748	1,084	337
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	571	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erectors	125,108	406	545	1,164
88 Jewllery and Precious Metal Workers	9,263	0	3	158
89 Glass Formers, Potters and Related Workers	53,211	41	13	117
90 Rubber and Plastics Product Makers	111,994	20	216	63
91 Paper and Paperboard Products Makers	36,856	263	1,050	290
92 Printers and Related Workers	88,253	186	101	48
93 Painters	24,212	86	739	5,005
94 Production and Related Workers, n.e.c	199,626	13,275	10,627	2,376
95 Bricklayer, Carpenters and Construction Workers	41,139	440	888	4,601
96 Stationary Engine and Related Equipment Operators	26,587	2,383	1,978	733
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	38,904	4,339	3,211	2,883
98 Transport Equipment Operators	50,572	6,991	4,118	3,642
99 Labourers, n.e.c	55,400	6,566	4,566	5,438

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	471	29	11	177	77
153,016	267,718	144,457	187,456	773,046	192,158
0	1,016	829	62	75	28
55	590	431	89,800	26,189	681
14,589	95	0	44	214	59
186	81,957	676	690	917	1,088
71	6,810	361	120	288	2,187
0	28	0	0	0	65
11	456	6	0	25	83
0	118	0	0	0	0
397	4,390	38	14	496	3,562
3	5,351	4	0	34	447
233	242	294	217	1,952	9,261
0	1	6,574	0	57	48
529	2,748	2,787	32,763	234,059	10,825
2,103	16,981	2,926	11,235	163,405	2,408
411	2,142	910	11,073	182,639	1,266
36	0	0	0	439	95
224	2,815	1,163	14,748	103,074	969
0	0	29	27	299	8,747
89	628	49,433	107	1,669	1,114
318	88,660	73	99	519	22,026
34,430	442	27	9	38	307
85,966	424	144	146	681	557
198	1,429	247	547	8,343	7,618
2,248	14,572	32,452	1,587	13,781	108,708
577	1,741	21,625	2,835	5,904	2,528
1,561	6,699	2,094	5,872	4,956	311
2,539	8,682	4,182	4,684	6,068	2,316
3,014	9,128	9,822	4,316	7,456	2,085
3,228	9,573	7,330	6,461	9,469	2,769

1984

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	15,655,952	4,664,996	124,977
0/1 Professional, Technical and Related Workers	949,920	4,324	4,577
01 Physical Scientists	5,440	0	0
02/03 Architects, Engineer, and Related Technicians	247,027	1,509	4,304
027/038 Mining Engineers and Technicians	3,236	0	2,585
026/037 Metallurgists and Metallurgical Technicians	13,461	1	289
024/035 Mechanical Engineers and Technicians	71,970	5	404
023/034 Electrical, Electronics Engineers and Technicians	39,867	143	301
025/036 Chemical Engineers and Technicians	15,920	0	97
022/033 Civil Engineers and Technicians	51,656	315	258
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	50,917	1,045	370
04 Aircraft and Ships Officers	25,211	1,889	0
06/07 Medical, Dental, Veterinary and Related Workers	242,057	77	68
061 Medical Doctors	45,178	6	3
063 Dentist	8,588	0	0
067 Pharmacists	24,175	0	6
071 Professional Nurses	77,062	7	34
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	87,054	64	25
11 Accountants	6,407	3	0
13 Teacher	335,343	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	88,435	846	205
2. Administrarive and Managerial	224,020	1,538	3,014
3. Clerical and Related Workers	1,571,203	4,888	7,926
4. Sales Workers	1,977,541	1,759	328
5. Service Workers	1,214,636	1,342	796

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
3,867,977	38,764	1,335,424	2,436,356	623,829	260,438	2,303,191
151,531	3,741	72,910	23,663	33,201	16,433	639,540
0	0	0	0	0	0	5,440
145,153	3,547	64,747	3,503	6,042	8,675	9,547
426	0	29	0	0	0	196
12,903	1	7	7	2	8	243
63,646	118	3,403	532	2,625	426	811
27,782	1,943	4,835	1,038	1,949	795	1,081
14,669	48	345	156	3	21	581
2,451	1,211	38,050	486	1,290	4,343	3,252
23,276	226	18,078	1,284	173	3,082	3,383
879	0	298	82	21,566	0	497
1,498	50	96	15,273	197	1,063	223,735
154	2	1	20	56	402	44,534
28	0	1	2	6	39	8,512
580	0	22	11,755	16	83	11 713
444	16	8	104	59	200	76,190
292	32	64	3,392	60	339	82,786
291	32	59	154	25	431	5,412
0	0	0	0	0	0	335,343
3,710	112	7,710	4,651	5,371	6,264	59,566
97,634	627	25,433	6,392	27,968	9,533	51.881
499,694	15,157	74,479	93,071	140,903	145,110	589,975
115,126	637	7,521	1,757,428	4,439	70,295	20,008
77,061	2,239	15,562	439,155	24,885	12,954	640,642

1984

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6 Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,653,142	4,630,596	10,458
7/8/9 Production and Related Workers	5,065,490	20,549	97,878
71 Miners, Quqrrymen, Well Drillers and Related Workers	73,146	16	67,307
72 Metal Processors	126,217	0	663
73 Wood Preparation Workers and Paper Makers	43,728	27	25
74 Chemical Processors and Related Workers	93,494	45	1,152
75 Spinners, Weavers, Knitters, Dyers and Related Workers	345,441	633	28
76 Tanners, Fellmongers and Pelt Dressors	3,468	0	0
77 Food and Beverage Processors	201,364	2,162	190
78 Tobacco Preparers and Tobacco Product Makers	8,746	25	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	359,823	8	18
80 Shoemakers and Leather Good Makers	33,612	0	0
81 Cabinet Makers and Related Wood Workers	136,082	815	26
82 Stone Cutters and Carvers	15,770	31	2,420
83 Blacksmiths, Hammersmiths and Forging Press Operators	332,593	14	227
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	347,925	236	2,679
85 Electrical Fitters and Related Electrical and Electronics Workers	251,662	23	484
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	4,572	1,099	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	167,870	28	429
88 Jewllery and Precious Metal Workers	10,975	6	0
89 Glass Formers, Potters and Related Workers	58,191	6	605
90 Rubber and Plastics Product Makers	115,205	3	5
91 Paper and Paperboard Products Makers	40,350	18	8
92 Printers and Related Workers	96,985	34	3
93 Painters	77,226	2	0
94 Production and Related Workers, n.e.c	247,152	653	173
95 Bricklayer, Carpenters and Construction Workers	660,863	1,063	379
96 Stationary Engine and Related Equipment Operators	72,714	787	4,399
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	174,243	1,384	3,312
98 Transport Equipment Operators	371,706	9,649	10,040
99 Labourers, n.e.c	594,365	1,782	3,306

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Con-struction	(6) Com-merce, hotel & restaurant	(7) Transpor-tation, ware-house, & com-munication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,611	13	770	4,384	808	229	4,273
2,925,320	16,350	1,138,749	112,263	391,625	5,884	356,872
2,250	13	3,237	20	7	9	287
123,287	0	783	408	192	1	883
42,401	0	986	157	30	0	102
89,256	452	182	701	73	0	1,633
337,369	30	396	1,238	45	0	5,702
3,455	0	0	11	0	0	2
186,241	0	126	10,464	33	5	2,143
8,553	0	0	6	125	0	37
311,954	0	513	16,871	34	1	30 424
30,380	0	0	1,854	6	0	1,372
126,992	5	4,060	2,758	267	35	1,124
7,062	0	5,353	718	1	0	185
312,310	257	13,838	1,492	530	62	3,863
229,710	513	8,576	15,874	23,200	245	66,892
211,178	4,441	9,464	10,150	4,274	207	11,441
530	0	0	174	1	1	2,767
131,171	409	27,799	540	674	27	6,793
9,498	0	1	932	0	0	538
56,658	0	302	362	30	0	228
113,658	0	103	337	54	55	990
39,585	0	84	176	61	27	391
93,046	1	93	325	63	91	3,329
27,251	5	38,674	2,709	327	3	8,255
204,917	1,865	12.246	3,970	1,954	263	21,111
44,144	2,068	587,016	5,025	5,556	580	15,032
28,914	3,745	18,692	1,466	4,997	750	8,964
44,394	1,530	60,621	5,726	48,082	323	8,871
53,216	421	32,190	11,939	222,058	2,117	30.078
55,940	595	313,414	15,860	78,951	1.082	123,435

1984

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	3,867,977	327,206	891,231	194,608
0/1 Professional, Technical and Related Workers	151,531	5,551	6,078	946
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	145,153	5,260	5,746	917
027/038 Mining Engineers and Technicians	426	0	69	5
026/037 Metallurgists and Metallurgical Technicians	12,903	1	8	0
024/035 Mechanical Engineers and Technicians	63,646	1,555	722	315
023/034 Electrical, Electronics Engineers and Technicians	27,782	560	523	181
025/036 Chemical Engineers and Technicians	14,669	323	516	13
022/033 Civil Engineers and Technicians	2,451	48	38	5
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	23,276	2,773	3,870	398
04 Aircraft and Ships Officers	879	27	0	9
06/07 Medical, Dental, Veterinary and Related Workers	1,498	157	101	8
061 Medical Doctors	154	4	7	1
063 Dentist	28	0	4	0
067 Pharmacists	580	3	1	0
071 Professional Nurses	444	24	71	4
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	292	126	18	3
11 Accountants	291	58	8	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	3,710	49	223	12
2. Administrative and Managerial	97,634	5,849	25,876	3,331
3. Clerical and Related Workers	499,694	46,199	105,822	11,297
4. Sales Workers	115,126	26,878	22,224	2,811
5. Service Workers	77,061	4,553	29,168	1,932

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
223,409	505,566	183,215	250,400	1,061,366	230,976
4,143	15,804	8,709	30,980	75,432	3,888
0	0	0	0	0	0
2,664	14,791	8,418	30,651	73,800	2,906
0	36	225	67	24	0
97	58	3	7,630	5,028	78
787	2,051	2,472	8,812	46,297	635
512	1,075	1,003	5,608	18 089	231
104	9,211	323	2,636	767	776
51	198	492	1,046	450	123
1,113	2,162	3,900	4,852	3,145	1,063
21	11	106	38	665	2
37	743	65	178	193	16
2	61	8	35	35	1
2	9	0	8	3	2
1	422	3	63	86	1
27	176	45	44	47	6
5	75	9	28	22	6
1	8	0	0	69	147
0	0	0	0	0	0
1,420	251	120	113	705	817
9,141	21,784	3,206	1,106	20,805	6,536
33,048	145,901	15,351	13,383	117,228	11,465
10,663	29,057	3,203	958	16,111	3,221
4,068	17,502	1,134	1,547	15,354	1,803

1984

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,611	494	286	0
7/8/9 Production and Related Workers	2,925,320	237,682	701,777	174,291
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,250	314	14	0
72 Metal Processors	123,287	40	129	157
73 Wood Preparation Workers and Paper Makers	42,401	285	48	26,481
74 Chemical Processors and Related Workers	89,256	374	447	8
75 Spinners, Weavers, Knitters, Dyers and Related Workers	337,369	180	326,400	159
76 Tanners, Fellmongers and Pelt Dressors	3,455	2	3,358	0
77 Food and Beverage Processors	186,241	185,141	304	155
78 Tobacco Preparers and Tobacco Product Makers	8,553	7,779	668	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	311,954	394	300,730	1,170
80 Shoemakers and Leather Good Makers	30,380	27	23,775	48
81 Cabinet Makers and Related Wood Workers	126,992	434	533	112,085
82 Stone Cutters and Carvers	7,062	3	56	1
83 Blacksmiths, Hammersmiths and Forging Press Operators	312,310	252	901	4,201
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	229,710	4,431	14,026	902
85 Electrical Fitters and Related Electrical and Electronics Workers	211,178	688	993	337
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	530	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	131,171	412	513	1,318
88 Jewllery and Precious Metal Workers	9,498	0	3	147
89 Glass Formers, Potters and Related Workers	56,658	38	15	116
90 Rubber and Plastics Product Makers	113,658	23	220	75
91 Paper and Paperboard Products Makers	39,585	247	1,156	291
92 Printers and Related Workers	93,046	170	105	51
93 Painters	27,251	87	809	5,684
94 Production and Related Workers, n.e.c	204,917	15,092	11,578	2,527
95 Bricklayer, Carpenters and Construction Workers	44,144	445	809	4,390
96 Stationary Engine and Related Equipment Operators	28,914	2,462	1,911	811
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	44,394	4,773	3,535	3,286
98 Transport Equipment Operators	53,216	7,086	4,102	4,083
99 Labourers, n.e.c	55,940	6,502	4,639	5,808

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	511	29	12	194	85
162,346	275,007	151,583	202,414	816,242	203.978
0	918	846	61	70	27
61	613	444	95,606	25,551	686
15,183	110	0	42	197	55
207	84,671	663	790	879	1,217
75	7,568	412	~~116~~	280	2,179
0	32	0	0	0	63
13	518	6	0	24	80
0	106	0	0	0	0
389	4,915	41	17	499	3,799
3	5,981	5	0	34	507
273	271	299	262	2,165	10,670
0	2	6,897	0	54	49
571	2,884	3,130	35,401	252,131	12,839
2,294	18,341	3,183	12,415	171,377	2,741
410	2,134	946	12,955	191,286	1,429
34	0	0	0	406	89
230	2,815	1,295	15,637	107,851	1,100
0	0	29	27	305	8,987
89	648	52,778	130	1,648	1,196
318	86,115	77	112	585	26,133
36,988	457	32	11	45	358
90,618	436	169	145	703	649
229	1,396	272	600	9,199	8,975
2,571	16,574	30,123	1,896	15,836	108,720
564	1,853	24,531	2,825	5,804	2,923
1,652	7,251	2,407	6,954	5,110	356
3,016	9,889	4.722	5,415	7,005	2,753
3,242	9,110	11,038	4,545	7,643	2,367
3,316	9,399	7,238	6,452	9,555	3,031

1985

Manpower Demand by

	Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00	TOTAL	16,170,954	4,589,994	127,267
0/1	Professional, Technical and Related Workers	1,033,306	4,474	4,642
01	Physical Scientists	6,024	0	0
02/03	Architects, Engineer, and Related Technicians	262,956	1,646	4,339
027/038	Mining Engineers and Technicians	3,254	0	2,663
026/037	Metallurgists and Metallurgical Technicians	14,004	1	258
024/035	Mechanical Engineers and Technicians	74,513	6	381
023/034	Electrical, Electronics Engineers and Technicians	43,393	134	287
025/036	Chemical Engineers and Technicians	16,938	0	96
022/033	Civil Engineers and Technicians	53,437	344	278
021, 028, 029, 031, 032, 039,	Other Engineers and Technicians	57,417	1,161	376
04	Aircraft and Ships Officers	25,814	1,778	0
06/07	Medical, Dental, Veterinary and Related Workers	273,150	87	79
061	Medical Doctors	51,170	8	4
063	Dentist	10,066	0	0
067	Pharmacists	24,531	0	7
071	Professional Nurses	90,247	9	39
062, 064, 065, 066, 068, 069, 072-079	Other Medical Workers	97,136	70	29
11	Accountants	7,440	3	0
13	Teacher	366,639	0	0
05, 08, 09, 12-19	Other Professional, Technical and Related Workers	91,283	960	224
2.	Administrative and Managerial	238,770	1,631	3,100
3.	Clerical and Related Workers	1,671,336	5,061	8,212
4.	Sales Workers	2,038,564	1,831	338
5.	Service Workers	1,289,643	1,378	761

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
4,012,267	39,238	1,457,630	2,501,702	634,127	271,458	2 537.271
159,688	3,923	79,572	24,713	35,292	17,125	703,877
0	0	0	0	0	0	6,024
153,845	3,726	69,847	3,896	6,612	9,304	9,741
384	0	35	0	0	0	172
13,500	1	9	9	2	8	216
65,869	122	3,785	580	2,582	408	780
30,602	1,936	5,253	1,063	2,269	823	1,026
15,740	56	331	168	3	20	524
2,721	1,347	38,801	498	1,554	4,475	3,419
25,029	264	21,633	1,578	202	3,570	3,604
900	0	349	90	22,156	0	541
1,487	58	115	15,723	234	1,232	254,135
170	2	1	23	67	466	50,429
33	0	1	2	7	45	9,978
513	0	27	11,699	19	96	12,170
460	19	9	119	70	232	89,290
311	37	77	3,880	71	393	92,268
263	29	55	138	23	385	6,544
0	0	0	0	0	0	366,639
3,193	110	9,206	4,866	6,267	6,204	60 253
102,139	614	28,532	6,204	29,233	9,941	57,376
521,637	15,261	83,059	96,149	138,160	151,056	652,741
120,942	623	8,369	1,806,620	4,436	73,266	22,139
82,197	2,350	16,841	442,184	27,233	13,731	702,968

1985

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,578,552	4,554,737	10,796
7/8/9 Production and Related Workers	5,320,783	20,882	99,418
71 Miners, Quqrrymen, Well Drillers and Related Workers	73,283	16	66,941
72 Metal Processors	131,225	0	722
73 Wood Preparation Workers and Paper Makers	41,655	23	22
74 Chemical Processors and Related Workers	96,719	40	1,041
75 Spinners, Weavers, Knitters, Dyers and Related Workers	338,527	706	25
76 Tanners, Fellmongers and Pelt Dressors	3,565	0	0
77 Food and Beverage Processors	206,407	2,363	166
78 Tobacco Preparers and Tobacco Product Makers	8,218	21	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	366,510	7	16
80 Shoemakers and Leather Good Makers	32,841	0	0
81 Cabinet Makers and Related Wood Workers	148,326	919	30
82 Stone Cutters and Carvers	16,429	32	2,353
83 Blacksmiths, Hammersmiths and Forging Press Operators	360,891	15	239
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	370,143	237	2,774
85 Electrical Fitters and Related Electrical and Electronics Workers	261,448	22	437
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	4,941	1,241	0
87 Plumbers, Welders, Shoet Metal and Structural Metal Prepares and Erctrors	179,801	30	446
88 Jewllery and Precious Metal Workers	11,165	6	0
89 Glass Formers, Potters and Related Workers	61,877	6	676
90 Rubber and Plastics Product Makers	117,089	4	6
91 Paper and Paperboard Products Makers	43,171	21	9
92 Printers and Related Workers	101,849	30	3
93 Painters	85,511	3	0
94 Production and Related Workers, n.e.c	259,775	727	152
95 Bricklayer, Carpenters and Construction Workers	683,734	1,114	399
96 Stationary Engine and Related Equipment Operators	81,130	881	4,953
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	197,139	1,474	3,427
98 Transport Equipment Operators	380,125	9,151	11,118
99 Labourers, n.e.c	657,379	1,793	3,463

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,707	12	800	4,803	806	232	4.659
3,023,957	16,455	1,240,457	121,029	398,967	6,107	393 511
2,110	11	3,816	24	8	11	346
128,015	1	828	398	215	1	1,045
40,402	0	923	145	33	0	107
92,196	499	193	728	83	0	1,939
329,870	26	379	1,214	49	0	6,258
3,551	0	0	11	0	0	3
189,289	0	119	11,937	35	5	2,493
7,956	0	0	7	109	0	35
311,324	0	531	17,601	39	2	36,990
29,644	0	0	1,799	7	0	1,391
138,264	4	4,397	3,178	282	31	1,221
7,373	0	5,640	851	1	0	179
336,942	279	16,573	1,755	538	56	4,494
241,472	487	9,823	17,439	23,672	232	74,007
221,719	3,848	9,019	10,060	3,952	188	12,203
479	0	0	162	1	2	3,056
137,098	356	32,673	581	680	25	7,912
9,692	0	1	894	0	0	572
60,182	1	333	389	31	0	259
115,405	1	104	391	54	49	1,075
42,364	0	83	196	69	24	405
97,770	1	90	324	67	84	3,480
30,476	4	42,229	2,569	325	3	9,902
209,380	2,085	14,722	4,560	2,197	289	25,663
47,212	2,104	603,369	5,475	6,166	590	17,305
31,368	4,088	21,572	1,476	5,551	783	10,458
50,188	1,699	72,605	6,730	50,452	360	10,204
55,926	417	37,825	13,064	215,905	2,193	34,526
56,290	544	362,610	17,071	88,446	1,179	125,983

1985

Manpower Demand by Industry

	Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00	TOTAL	4,012,267	333,691	892,196	205,133
0/1	Professional, Technical and Related Workers	159,688	5,420	5,389	991
01	Physical Scientists	0	0	0	0
02/03	Architects, Engineer, and Related Technicians	153,845	5,136	5,126	963
027/038	Mining Engineers and Technicians	384	0	53	4
026/037	Metallurgists and Metallurgical Technicians	13,500	1	6	0
024/035	Mechanical Engineers and Technicians	65,869	1,374	613	295
023/034	Electrical, Electronics Engineers and Technicians	30,602	562	481	180
025/036	Chemical Engineers and Technicians	15,740	305	454	13
022/033	Civil Engineers and Technicians	2,721	43	37	6
021, 028, 029, 031, 032, 039,	Other Engineers and Technicians	25,029	2,851	3,482	465
04	Aircraft and Ships Officers	900	30	0	9
06/07	Medical, Dental, Veterinary and Related Workers	1,487	165	87	8
061	Medical Doctors	170	5	7	1
063	Dentist	33	0	4	0
067	Pharmacists	513	4	1	0
071	Professional Nurses	460	28	58	4
062, 064, 065, 066, 068, 069, 072-079	Other Medical Workers	311	128	17	3
11	Accountants	263	48	6	0
13	Teacher	0	0	0	0
05, 08, 09, 12-19	Other Professional, Technical and Related Workers	3,193	41	170	11
2.	Administrarive and Managerial	102,139	5,759	27,608	3,410
3.	Clerical and Related Workers	521,637	47,252	111,526	11,668
4.	Sales Workers	120,942	27,643	23,307	2,927
5.	Service Workers	82,197	4,516	32,043	2,045

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
234,087	526,569	191,348	247,680	1,116,719	244,844
3,793	16,495	9,120	33,355	80,858	4,267
0	0	0	0	0	0
2,620	15,572	8,821	32,998	79,272	3,337
0	33	211	61	22	0
82	53	4	7,895	5,381	78
718	2,011	2,362	9,145	48,660	691
505	1,095	1,081	6,171	20,248	279
107	9,995	356	2,729	798	983
53	202	531	1,220	505	124
1,155	2,183	4,276	5,777	3,658	1,182
22	12	123	46	655	3
36	679	68	206	219	19
2	62	9	39	44	1
2	9	0	11	4	3
1	356	3	63	84	1
25	176	46	57	59	7
6	76	10	36	28	7
1	7	0	0	63	138
0	0	0	0	0	0
1,114	225	108	105	649	770
9,485	23,135	3,254	1,034	21,127	7,327
33,690	155,004	15,699	13,440	121,395	11,963
11,078	30,430	3,451	1,019	17,613	3,474
4,384	18,562	1,076	1,517	16,107	1,947

1985

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6 Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,707	517	287	0
7/8/9 Production and Related Workers	3,023,957	242,584	692,036	184,092
71 Miners, Quqrrymen, Well Drillers and Related Workers	2,110	275	12	0
72 Metal Processors	128,015	37	111	152
73 Wood Preparation Workers and Paper Makers	40,402	249	41	23,979
74 Chemical Processors and Related Workers	92,196	381	412	9
75 Spinners, Weavers, Knitters, Dyers and Related Workers	329,870	182	318,099	150
76 Tanners, Fellmongers and Pelt Dressors	3,551	2	3,452	0
77 Food and Beverage Processors	189,289	188,186	261	141
78 Tobacco Preparers and Tobacco Product Makers	7,956	7,298	565	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	311,324	380	299,324	1,178
80 Shoemakers and Leather Good Makers	29,644	25	22,320	46
81 Cabinet Makers and Related Wood Workers	138,264	410	475	121,585
82 Stone Cutters and Carvers	7,373	4	47	1
83 Blacksmiths, Hammersmiths and Forging Press Operators	336,942	268	904	4,879
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	241,472	4,498	14,398	929
85 Electrical Fitters and Related Electrical and Electronics Workers	221,719	626	906	334
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	479	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	137,098	418	483	1,481
88 Jewllery and Precious Metal Workers	9,692	0	3	133
89 Glass Formers, Potters and Related Workers	60,182	35	16	114
90 Rubber and Plastics Product Makers	115,405	26	223	88
91 Paper and Paperboard Products Makers	42,364	231	1,259	290
92 Printers and Related Workers	97,770	154	108	55
93 Painters	30,476	88	878	6,406
94 Production and Related Workers, n.e.c	209,380	16,978	12,508	2,679
95 Bricklayer, Carpenters and Construction Workers	47,212	450	732	4,123
96 Stationary Engine and Related Equipment Operators	31,368	2,543	1,846	893
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	50,188	5,223	3,852	3,715
98 Transport Equipment Operators	55,926	7,182	4,089	4,549
99 Labourers, n.e.c	56,290	6,434	4,712	6,183

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	555	29	12	212	95
171,657	282,388	158,719	217,303	859,407	215,771
0	814	861	60	64	24
67	636	457	101,179	24,690	686
15,741	125	0	39	178	50
229	87,439	645	897	832	1,352
79	8,360	466	109	270	2,155
0	37	0	0	0	60
15	583	6	0	22	75
0	93	0	0	0	0
377	5,463	44	21	500	4,037
4	6,640	6	0	33	570
317	300	303	310	2,389	12,175
0	2	7,220	0	50	49
615	3,024	3,492	38,031	270,721	15,008
2,493	19,756	3,450	13,632	179,220	3,096
405	2,124	981	14,979	199,762	1,602
31	0	0	0	366	81
234	2,811	1,433	16,478	112,520	1,240
0	0	28	27	309	9,192
88	670	56,211	155	1,614	1,279
314	83,334	83	125	656	30,556
39,595	473	38	13	53	412
95,192	449	196	142	725	749
262	1,359	299	655	10,094	10,435
2,914	18,668	27,427	2,232	18,026	107,948
545	1,968	27,611	2,779	5,659	3,345
1,743	7,825	2,740	8,124	5,251	403
3,529	11,150	5,294	6,197	8,004	3,224
3,476	9,080	12,324	4,755	7,805	2,666
3,392	9,205	7,104	6,364	9,594	3,302

1986

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	16,713,956	4,515,000	129,484
0/1 Professional, Technical and Related Workers	1,121,166	4,631	4,699
01 Physical Scientists	6,645	0	0
02/03 Architects, Engineer, and Related Technicians	279,589	1,793	4,369
027/038 Mining Engineers and Technicians	3,268	0	2,739
026/037 Metallurgists and Metallurgical Technicians	14,516	1	226
024/035 Mechanical Engineers and Technicians	76,925	7	356
023/034 Electrical, Electronics Engineers and Technicians	47,141	123	273
025/036 Chemical Engineers and Technicians	18,020	0	95
022/033 Civil Engineers and Technicians	55,131	375	298
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	64,588	1,287	382
04 Aircraft and Ships Officers	26,350	1,658	0
06/07 Medical, Dental, Veterinary and Related Workers	306,989	96	87
061 Medical Doctors	57,671	10	4
063 Dentist	11,728	0	0
067 Pharmacists	24,719	0	8
071 Professional Nurses	105,076	11	43
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	107,795	75	32
11 Accountants	8,602	2	0
13 Teacher	399,263	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	93,728	1,082	243
2. Administrarive and Managerial	254,463	1,730	3,187
3. Clerical and Related Workers	1,776,915	5,238	8,500
4. Sales Workers	2,101,576	1,905	349
5. Service Workers	1,368,381	1,416	726

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
4,157,762	39,673	1,591,613	2,569,498	643,682	283,070	2,784,174
168,120	4,107	86,874	25,812	37,435	17,853	771 635
0	0	0	0	0	0	6,645
162,816	3,907	75,362	4,317	7,216	9,974	9,835
342	0	41	0	0	0	146
14,071	1	11	10	3	7	186
67,976	126	4,207	630	2,500	384	739
33,606	1,921	5,708	1,078	2,624	850	958
16,889	64	312	179	4	18	459
3,013	1,491	39,442	505	1,850	4,603	3,554
26,919	304	25,641	1,915	235	4,112	3,793
913	0	407	99	22,687	0	586
1,478	67	140	16,185	272	1,413	287,251
189	3	2	27	78	534	56,824
37	0	2	2	8	52	11,627
446	0	32	11,629	22	110	12,472
477	21	11	134	81	266	104,032
329	43	93	4,393	63	451	102,296
233	25	50	120	20	334	7,818
0	0	0	0	0	0	399,263
2,680	108	10,915	5,091	7,240	6,132	60,237
106,839	601	32,020	6,021	30,491	10,371	63,203
543,986	15,345	92,658	99,335	135,189	157,318	719,346
126,861	609	9,316	1,857,313	4,425	76,398	24,400
87,656	2,462	18,231	445,265	29,740	14,561	768,324

1986

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,504,004	4,478,865	11,134
7/8/9 Production and Related Workers	5,587,451	21,215	100,889
71 Miners, Quqrrymen, Well Drillers and Related Workers	73,407	17	66,490
72 Metal Processors	135,768	0	781
73 Wood Preparation Workers and Paper Makers	39,086	20	19
74 Chemical Processors and Related Workers	100,009	34	926
75 Spinners, Weavers, Knitters, Dyers and Related Workers	331,919	781	21
76 Tanners, Fellmongers and Pelt Dressors	3,659	0	0
77 Food and Beverage Processors	211,653	2,570	140
78 Tobacco Preparers and Tobacco Product Makers	7,486	18	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	374,166	7	15
80 Shoemakers and Leather Good Makers	32,105	0	0
81 Cabinet Makers and Related Wood Workers	161,069	1,025	33
82 Stone Cutters and Carvers	17,102	33	2,281
83 Blacksmiths, Hammersmiths and Forging Press Operators	390,331	17	250
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	392,999	239	2,868
85 Electrical Fitters and Related Electrical and Electronics Workers	270,872	20	388
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	5,318	1,387	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	192,352	31	463
88 Jewllery and Precious Metal Workers	11,303	7	0
89 Glass Formers, Potters and Related Workers	65,640	7	748
90 Rubber and Plastics Product Makers	119,028	4	7
91 Paper and Paperboard Products Makers	46,029	23	10
92 Printers and Related Workers	106,591	25	4
93 Painters	94,478	3	0
94 Production and Related Workers, n.e.c	272,536	802	130
95 Bricklayer, Carpenters and Construction Workers	705,377	1,166	420
96 Stationary Engine and Related Equipment Operators	90,217	978	5,518
97 Material-Handing and Related Equipment Operators,	222,237	1,565	3,541
Dockers and Freight Handlers	389,162	8,631	12,216
98 Transport Equipment Operators	725,552	1,805	3,620
99 Labourers, n.e.c			

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,804	11	830	5,263	802	235	5,060
3,122,496	16,538	1,351,684	130,489	405,600	6,334	432,206
1,957	10	4,473	28	9	12	411
132,261	1	875	384	239	1	1,226
37,927	0	841	131	37	0	111
95,170	546	206	754	92	0	2,281
322,669	22	356	1,177	53	0	6,840
3,645	0	0	10	0	0	4
192,334	0	111	13,577	36	4	2,881
7,336	0	0	8	92	0	32
310,798	0	549	18,344	43	2	44,408
28,978	0	0	1 725	8	0	1,394
149,951	3	4,762	3,649	297	28	1,321
7,682	0	5,937	1,000	1	0	168
362,234	301	19,693	2,050	545	48	5,193
253,177	460	11,227	19,153	24,103	216	81,556
232,180	3,243	8,421	9,895	3,609	167	12,949
421	0	0	146	1	2	3,361
142,863	303	38,207	625	684	22	9,154
9,846	0	1	844	0	0	605
63,772	1	367	419	33	0	293
117,202	1	104	451	53	42	1,164
45,179	0	83	219	77	21	417
102,395	1	87	321	71	76	3,611
33,875	3	46,125	2,392	323	3	11,754
212,970	2,304	17,549	5,217	2,442	316	30,806
50,338	2,137	618,159	5,965	6,783	600	19,809
33,942	4,430	24,825	1,478	6,111	818	12,117
56,276	1,868	86,274	7,856	52,785	400	11,672
58,686	413	44,224	14,294	209,008	2,274	39,416
56,432	491	418,228	18,377	98,065	1,202	177,252

1986

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	4,157,762	339,775	894,026	215,632
0/1 Professional, Technical and Related Workers	168,120	5,294	4,708	1,040
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	162,816	5,019	4,508	1,013
027/038 Mining Engineers and Technicians	342	0	39	4
026/037 Metallurgists and Metallurgical Technicians	14,071	1	5	0
024/035 Mechanical Engineers and Technicians	67,976	1,201	512	272
023/034 Electrical, Electronics Engineers and Technicians	33,606	564	435	179
025/036 Chemical Engineers and Technicians	16,889	288	394	13
022/033 Civil Engineers and Technicians	3,013	39	36	7
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	26,919	2,926	3,087	538
04 Aircraft and Ships Officers	913	32	0	8
06/07 Medical, Dental, Veterinary and Related Workers	1,478	170	70	9
061 Medical Doctors	189	6	6	1
063 Dentist	37	0	3	0
067 Pharmacists	446	4	1	0
071 Professional Nurses	477	31	45	5
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	329	129	15	3
11 Accountants	233	39	5	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	2,680	34	125	10
2. Administrarive and Managerial	106,839	5,639	29,414	3,491
3. Clerical and Related Workers	543,986	48,061	117,365	12,052
4. Sales Workers	126,861	28,272	24,408	3,048
5. Service Workers	87,656	4,456	35,150	2,165

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
244,731	548,372	199,498	284,904	1,172,056	258,768
3,447	17,218	9,548	35,789	86,420	4,656
0	0	0	0	0	0
2,542	16,392	9,240	35,402	84,897	3,803
0	29	195	55	20	0
66	48	4	8,128	5,743	76
644	1,962	2,235	9,443	50,964	743
492	1,114	1,164	6,764	22,560	334
107	10,834	392	2,810	827	1,224
53	206	573	1,411	565	123
1,180	2,199	4,677	6,791	4,218	1,303
22	14	142	54	638	3
37	610	71	238	250	23
3	61	10	45	55	2
3	9	0	14	5	3
1	294	2	62	80	2
24	171	47	72	74	8
6	75	12	45	36	8
1	6	0	0	56	126
0	0	0	0	0	0
845	196	95	95	579	701
9,833	24,567	3,304	966	21,423	8,202
34,317	164,657	16,059	13,485	125,527	12,463
11,500	31,864	3,718	1,082	19,227	3,742
4,720	19,684	1,022	1,486	16,873	2,100

1986

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,804	537	288	0
7/8/9 Production and Related Workers	3,122,496	247,516	682,693	193,836
71 Miners, Quqrrymen, Well Drillers and Related Workers	1,957	235	9	0
72 Metal Processors	132,261	33	94	146
73 Wood Preparation Workers and Paper Makers	37,927	212	33	21,045
74 Chemical Processors and Related Workers	95,170	389	378	11
75 Spinners, Weavers, Knitters, Dyers and Related Workers	322,669	185	310,086	140
76 Tanners, Fellmongers and Pelt Dressors	3,645	2	3,545	0
77 Food and Beverage Processors	192,334	191,226	219	124
78 Tobacco Preparers and Tobacco Product Makers	7,336	6,792	464	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	310,798	365	298,014	1,179
80 Shoemakers and Leather Good Makers	28,978	22	20,908	43
81 Cabinet Makers and Related Wood Workers	149,951	385	418	131,388
82 Stone Cutters and Carvers	7,682	4	39	1
83 Blacksmiths, Hammersmiths and Forging Press Operators	362,234	284	907	5,601
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	253,177	4,565	14,763	953
85 Electrical Fitters and Related Electrical and Electronics Workers	232,180	560	822	328
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	421	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	142,863	425	453	1,654
88 Jewllery and Precious Metal Workers	9,846	0	4	117
89 Glass Formers, Potters and Related Workers	63,772	32	18	111
90 Rubber and Plastics Product Makers	117,202	29	226	102
91 Paper and Paperboard Products Makers	45,179	213	1,359	288
92 Printers and Related Workers	102,395	136	112	58
93 Painters	33,875	89	944	7,168
94 Production and Related Workers, n.e.c	212,970	18,930	13,416	2,830
95 Bricklayer, Carpenters and Construction Workers	50,338	456	658	3,800
96 Stationary Engine and Related Equipment Operators	33,942	2,625	1,783	979
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	56,276	5,687	4,161	4,169
98 Transport Equipment Operators	58,686	7,276	4,076	5,039
99 Labourers, n.e.c	56,432	6,358	4,784	6,562

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	601	29	13	231	105
180,914	289,781	165,818	232,083	902,355	227,500
0	704	873	57	57	22
74	660	468	106,503	23,601	682
16,261	142	0	34	156	44
252	90,237	623	1,010	775	1,495
83	9,182	523	100	257	2,113
0	41	0	0	0	57
17	651	6	0	21	70
0	80	0	0	0	0
362	6,034	47	24	497	4,276
4	7,324	7	0	32	638
364	331	306	362	2,623	13,774
0	2	7,541	0	46	49
659	3,167	3,873	40,646	289,770	17,327
2,698	21,220	3,727	14,885	186,895	3,471
397	2,110	1,015	17,143	208,022	1,783
27	0	0	0	321	72
237	2,803	1,579	17,268	117,057	1,387
0	0	28	26	312	9,359
87	691	59,718	182	1,569	1,364
309	80,291	88	140	731	35,286
42,242	488	43	15	61	470
99,668	461	224	137	744	855
297	1,319	326	710	11,029	11,993
3,278	20,848	24,356	2,593	20,346	106,373
520	2,087	30,858	2,697	5,468	3,794
1,832	8,419	3,092	9,381	5,377	454
4,079	12,464	5,896	7,029	9,064	3,727
3,713	9,037	13,676	4,946	7,941	2,982
3,454	8,988	6,925	6,195	9,583	3,583

1987

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	16,859,968	4,339,996	131,649
0/1 Professional, Technical and Related Workers	1,159,685	4,439	4,773
01 Physical Scientists	6,800	0	0
02/03 Architects, Engineer, and Related Technicians	296,835	1,803	4,414
027/038 Mining Engineers and Technicians	3,293	0	2,825
026/037 Metallurgists and Metallurgical Technicians	14,801	1	193
024/035 Mechanical Engineers and Technicians	78,318	8	332
023/034 Electrical, Electronics Engineers and Technicians	50,679	100	260
025/036 Chemical Engineers and Technicians	18, 970	0	95
022/033 Civil Engineers and Technicians	57,689	377	320
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	73,085	1,317	389
04 Aircraft and Ships Officers	30,341	1,415	0
06/07 Medical, Dental, Veterinary and Related Workers	318,824	97	96
061 Medical Doctors	57,828	11	5
063 Dentist	12,139	0	0
067 Pharmacists	24,142	0	8
071 Professional Nurses	108,728	12	48
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	115,987	74	35
11 Accountants	8,910	2	0
13 Teacher	403,514	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	94,461	1,122	263
2. Administrarive and Managerial	259,481	1,806	3,218
3. Clerical and Related Workers	1,804,711	5,024	8,635
4. Sales Workers	2,174,558	1,827	355
5. Service Workers	1,371,374	1,358	863

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
4,307,733	40,073	1,738,493	2,639,832	652,580	295,337	2,714,281
174,267	4,132	96,982	28,828	42,680	18,389	785,195
0	0	0	0	0	0	6,800
169,584	3,938	83,134	5,098	7,543	10,555	10,766
290	0	50	0	0	0	128
14,403	1	13	13	3	6	168
68,959	124	4,777	729	2,282	351	756
36,270	1,826	6,341	1,154	2,899	866	963
17,860	70	296	203	4	16	426
3,272	1,582	40,836	541	2,095	4,664	4,002
28,530	335	30,821	2,458	260	4,652	4,323
907	0	484	116	26,854	0	565
1,449	73	170	17,811	301	1,590	297,237
202	3	2	32	86	601	56,886
41	0	2	3	8	59	12,026
369	0	39	12,341	25	124	11,236
493	23	14	161	90	299	107,588
344	47	113	5,274	92	507	109,501
193	20	45	108	17	276	8,249
0	0	0	0	0	0	403,514
2,134	101	13,149	5,695	7,965	5,968	58,064
108,372	578	34,930	6,069	32,005	10,890	61,613
564,962	15,987	101,080	103,792	137,496	166,490	701,245
137,488	783	10,163	1,917,497	3,974	78,685	23,786
103,389	2,060	19,889	441,980	27,848	14,997	758,990

Manpower Demand by Industry

1987

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,330,522	4,305,198	11,311
7/8/9 Production and Related Workers	5,759,643	20,344	102,494
71 Miners, Quqrrymen, Well Drillers and Related Workers	73,610	17	66,085
72 Metal Processors	139,545	0	843
73 Wood Preparation Workers and Paper Makers	35,964	15	15
74 Chemical Processors and Related Workers	102,941	26	807
75 Spinners, Weavers, Knitters, Dyers and Related Workers	324,350	810	17
76 Tanners, Fellmongers and Pelt Dressors	3,746	0	0
77 Food and Beverage Processors	215,909	2,627	114
78 Tobacco Preparers and Tobacco Product Makers	6,808	14	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	376,142	6	13
80 Shoemakers and Leather Good Makers	31.169	0	0
81 Cabinet Makers and Related Wood Workers	173,792	1,070	37
82 Stone Cutters and Carvers	17,738	32	2,209
83 Blacksmiths, Hammersmiths and Forging Press Operators	419,840	18	262
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	405,853	227	2,967
85 Electrical Fitters and Related Electrical and Electronics Workers	277,833	17	338
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	5,214	1,451	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	204,318	31	482
88 Jewllery and Precious Metal Workers	11,282	7	0
89 Glass Formers, Potters and Related Workers	69,349	7	822
90 Rubber and Plastics Product Makers	120,730	4	7
91 Paper and Paperboard Products Makers	48,818	24	11
92 Printers and Related Workers	110,679	19	4
93 Painters	102,596	3	0
94 Production and Related Workers, n.e.c	281,052	831	108
95 Bricklayer, Carpenters and Construction Workers	723,010	1,151	441
96 Stationary Engine and Related Equipment Operators	98,267	1,017	6,105
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	248,021	1,567	3,662
98 Transport Equipment Operators	393,347	7,639	13,359
99 Labourers, n.e.c	737,720	1,714	3,786

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,811	17	906	5,325	664	193	5,097
3,217,444	16,516	1,474,543	136,341	407,913	5,693	378,355
1,790	9	5,223	32	10	12	432
135,885	1	925	354	264	1	1,272
34,944	0	738	109	41	0	102
98,068	590	220	755	103	0	2,372
315,395	17	326	1,093	56	0	6,636
3,732	0	0	10	0	0	4
195,154	0	99	14,926	38	3	2,948
6,685	0	0	9	75	0	25
310,024	0	567	18,505	48	2	46,977
28,353	0	0	1,578	9	0	1,229
161,874	3	5,163	4,044	312	21	1,268
7,980	0	6,248	1,131	1	0	137
387,767	321	23,266	2,306	552	35	5,313
264,538	429	12,819	20,379	24,552	173	79,769
242,306	2,615	7,652	9,344	3,255	125	12,181
355	0	0	123	1	2	3,282
148,306	247	44,521	651	688	17	9,375
9,948	0	2	758	0	0	567
67,349	1	406	436	35	0	293
118,913	1	103	503	52	30	1,117
47,986	0	81	237	85	15	379
106,818	1	82	306	75	59	3,315
37,411	3	50,437	2,104	320	3	12,315
215,469	2,510	20,788	5,766	2,697	299	32,584
53,462	2,517	631,460	6,297	7,422	528	20,092
36,598	4,744	28,521	1,425	6,690	740	12 427
62,589	2,025	101,925	8,835	55,204	383	11 831
61,436	406	51,524	15,153	201,909	2,040	39 881
56,309	436	481,447	19,172	103,419	1,205	70,232

1987

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	4,307,733	346,571	902,562	225,429
0/1 Professional, Technical and Related Workers	174,267	5,102	3,974	1,076
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	169,584	4,839	3,829	1,049
027/038 Mining Engineers and Technicians	290	0	26	3
026/037 Metallurgists and Metallurgical Technicians	14,403	1	4	0
024/035 Mechanical Engineers and Technicians	68,959	1,022	412	243
023/034 Electrical, Electronics Engineers and Technicians	36,270	558	380	174
025/036 Chemical Engineers and Technicians	17,860	268	330	13
022/033 Civil Engineers and Technicians	3,272	34	33	8
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	28,530	2,956	2,644	608
04 Aircraft and Ships Officers	907	33	0	7
06/07 Medical, Dental, Veterinary and Related Workers	1,449	174	57	11
061 Medical Doctors	202	6	6	1
063 Dentist	41	0	3	0
067 Pharmacists	369	5	1	0
071 Professional Nurses	493	35	34	6
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	344	128	13	4
11 Accountants	193	30	3	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	2,134	26	85	9
2. Administrarive and Managerial	108,372	5,114	30,515	3,567
3. Clerical and Related Workers	564,962	48,356	120,449	12,361
4. Sales Workers	137,488	30,730	25,049	3,126
5. Service Workers	103,389	4,483	49,339	1,990

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
254,485	574,582	207,175	301,729	1,223,991	271,209
3,061	17,705	9,850	37,725	90,793	4,981
0	0	0	0	0	0
2,403	16,997	9,535	37,316	89,375	4,241
0	24	175	46	16	0
50	41	5	8,207	6,025	70
558	1,873	2,059	9,566	52,446	780
466	1,115	1,233	7,281	24,672	391
105	11,559	424	2,839	841	1,481
53	207	608	1,594	619	116
1,171	2,178	5,031	7,783	4,756	1,403
21	16	159	62	605	4
35	525	76	266	277	28
3	57	11	50	66	2
3	8	0	17	6	4
1	230	2	56	72	2
22	159	49	88	90	10
6	71	14	55	43	10
1	5	0	0	47	107
0	0	0	0	0	0
601	162	80	81	489	601
9,693	26,464	3,319	1,108	20,628	7,964
35,056	177,372	16,406	13,701	128,225	13,036
11,738	34,324	3,799	1,099	23,709	3,914
5,017	21,204	1,069	1,588	16,369	2,330

1987

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6 Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,811	582	264	0
7/8/9 Production and Related Workers	3,217,444	252,204	672,972	203,309
71 Miners, Quqrrymen, Well Drillers and Related Workers	1,790	193	7	0
72 Metal Processors	135,885	30	78	137
73 Wood Preparation Workers and Paper Makers	34,944	173	26	17,666
74 Chemical Processors and Related Workers	98,068	396	345	13
75 Spinners, Weavers, Knitters, Dyers and Related Workers	315,395	187	302,004	127
76 Tanners, Fellmongers and Pelt Dressors	3,732	2	3,632	0
77 Food and Beverage Processors	195,154	194,044	178	104
78 Tobacco Preparers and Tobacco Product Makers	6,685	6,254	366	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	310,024	348	296,462	1,172
80 Shoemakers and Leather Good Makers	28,353	19	19,516	40
81 Cabinet Makers and Related Wood Workers	161,874	358	362	141,341
82 Stone Cutters and Carvers	7,980	4	31	1
83 Blacksmiths, Hammersmiths and Forging Press Operators	387,767	301	910	6,362
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	264,538	4,626	15,104	973
85 Electrical Fitters and Related Electrical and Electronics Workers	242,306	491	739	320
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	355	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	148,306	430	424	1,833
88 Jewllery and Precious Metal Workers	9,948	0	4	98
89 Glass Formers, Potters and Related Workers	67,349	28	19	107
90 Rubber and Plastics Product Makers	118,913	33	229	117
91 Paper and Paperboard Products Makers	47,986	195	1,456	283
92 Printers and Related Workers	106,818	118	115	62
93 Painters	37,411	89	1,008	7,963
94 Production and Related Workers, n.e.c	215,469	20,926	14,285	2,979
95 Bricklayer, Carpenters and Construction Workers	53,462	461	585	3,419
96 Stationary Engine and Related Equipment Operators	36,598	2,707	1,721	1,067
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	62,589	6,161	4,457	4,642
98 Transport Equipment Operators	61,436	7,362	4,060	5,547
99 Labourers, n.e.c	56,309	6,267	4,849	6,936

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	648	22	10	205	80
189,920	296,865	172,710	246,498	944,062	238,904
0	586	882	54	49	19
81	684	479	111,463	22,261	672
16,725	158	0	29	130	37
276	92,964	596	1,128	707	1,643
87	10,025	583	89	241	2,052
0	46	0	0	0	52
20	721	6	0	18	63
0	65	0	0	0	0
342	6,619	50	28	492	4,511
5	8,026	8	0	31	708
413	363	308	417	2,864	15,448
0	2	7,852	0	41	49
703	3,310	4,268	43,200	308,939	19,774
2,907	22,708	4,010	16,154	194,194	3,862
386	2,090	1,048	19,424	215,836	1,972
23	0	0	0	269	62
240	2,788	1,729	17,990	121,331	1,541
0	0	27	25	314	9,480
85	712	63,231	210	1 509	1,448
300	76,900	93	154	808	40,279
44,881	504	49	18	69	531
103,938	473	254	131	761	966
334	1,274	354	766	11,988	13,635
3,658	23,091	20,892	2,976	22,773	103,889
489	2,206	34,236	2,577	5,224	4,265
1,919	9,024	3,460	10,710	5,484	506
4,658	13,816	6,521	7,901	10,174	4,259
3,951	8,971	15,078	5,113	8,042	3,312
3,499	8,739	6,696	5,941	9,513	3,869

1988

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	17,240,960	4,220,994	133,770
0/1 Professional, Technical and Related Workers	1,217,662	4,486	4,948
01 Physical Scientists	6,963	0	0
02/03 Architects, Engineer, and Related Technicians	324,113	1,909	4,549
027/038 Mining Engineers and Technicians	3,354	0	2,972
026/037 Metallurgists and Metallurgical Technicians	15,026	1	164
024/035 Mechanical Engineers and Technicians	80,843	9	314
023/034 Electrical, Electronics Engineers and Technicians	56,215	81	251
025/036 Chemical Engineers and Technicians	19,907	0	96
022/033 Civil Engineers and Technicians	63,836	399	349
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	84,932	1,419	403
04 Aircraft and Ships Officers	34,531	1,254	0
06/07 Medical, Dental, Veterinary and Related Workers	339,030	103	109
061 Medical Doctors	63,063	12	5
063 Dentist	13,656	0	0
067 Pharmacists	24,473	0	10
071 Professional Nurses	122,278	14	54
062, 064, 065, 066, 068, 609, 072-079 Other Medical Workers	115,560	77	40
11 Accountants	9,956	1	0
13 Teacher	407,765	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	95,304	1,219	290
2. Administrarive and Managerial	291,049	1,908	3,213
3. Clerical and Related Workers	1,911,389	5,083	8,750
4. Sales Workers	2,254,694	1,837	37
5. Service Workers	1,409,142	1,364	1,014

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
4,461,474	40,424	1,899,500	2,712,808	660,829	308,275	2,802,887
180,710	4,246	118,191	32,176	55,146	19,004	798,755
0	0	0	0	0	0	6,963
176,645	4,052	100,098	5,998	11,223	11,203	8,436
240	0	65	0	0	0	77
14,712	1	17	17	5	5	104
69,875	125	5,915	840	2,901	313	551
39,097	1,765	7,689	1,217	4,544	883	688
18,911	79	297	229	7	14	274
3,546	1,709	45,950	571	3,357	4,731	3,224
30,264	373	40,165	3,124	409	5,257	3,518
899	0	626	136	31,022	0	594
1,416	82	226	19,584	473	1,777	315,260
216	3	3	38	135	672	61,979
45	0	3	3	13	66	13,526
293	0	52	13,069	39	138	10,872
505	26	18	192	141	334	120,994
357	53	150	6,282	145	567	107,889
151	16	41	90	18	214	9,425
0	0	0	0	0	0	407,765
1,599	96	17,200	6,368	12,410	5,810	50,312
111,088	552	42,350	6,114	46,259	11,441	68,124
589,139	16,528	121,929	109,676	163,164	176,259	720,861
150,122	998	12,150	1,978,585	4,914	80,497	25,220
129,037	1,711	23,603	438,488	35,909	15,797	762,219

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,211,538	4,185,928	11,245
7/8/9 Production and Related Workers	5,945,487	20,388	104,229
71 Miners, Quqrrymen, Well Drillers and Related Workers	73,831	17	65,715
72 Metal Processors	142,295	0	907
73 Wood Preparation Workers and Paper Makers	32,226	11	12
74 Chemical Processors and Related Workers	105,547	20	685
75 Spinners, Weavers, Knitters, Dyers and Related Workers	316,068	872	13
76 Tanners, Fellmongers and Pelt Dressors	3,817	0	0
77 Food and Beverage Processors	219,663	2,795	87
78 Tobacco Preparers and Tobacco Product Makers	6,077	10	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	378,215	5	11
80 Shoemakers and Leather Good Makers	30,212	0	0
81 Cabinet Makers and Related Wood Workers	186,237	1,160	41
82 Stone Cutters and Carvers	18,252	33	2,136
83 Blacksmiths, Hammersmiths and Forging Press Operators	448,475	20	275
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	415,996	225	3,072
85 Electrical Fitters and Related Electrical and Electronics Workers	283,234	16	286
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	5,249	1,575	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	215,616	33	501
88 Jewllery and Precious Metal Workers	11,187	8	0
89 Glass Formers, Potters and Related Workers	72,850	8	900
90 Rubber and Plastics Product Makers	122,046	5	8
91 Paper and Paperboard Products Makers	51,443	26	12
92 Printers and Related Workers	114,331	15	4
93 Painters	110,411	3	0
94 Production and Related Workers, n.e.c	288,366	894	85
95 Bricklayer, Carpenters and Construction Workers	725,936	1,186	464
96 Stationary Engine and Related Equipment Operators	105,429	1,099	6,716
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	265,451	1,635	3,789
98 Transport Equipment Operators	368,435	7,016	14,550
99 Labourers, n.e.c	828,592	1,701	3,960

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,842	27	835	5,384	757	159	5,361
3,299,536	16,362	1,580,442	142,385	354,680	5,118	422,347
1,605	7	5,966	36	9	12	464
138,508	1	960	321	245	1	1,352
31,383	0	599	86	39	0	96
100,606	629	230	755	96	0	2,526
307,217	13	283	999	51	0	6,620
3,804	0	0	9	0	0	4
197,207	0	84	16,359	34	2	3,095
5,990	0	0	10	48	0	19
308,159	0	573	18,635	45	2	50,785
27,690	0	0	1,413	8	0	1,101
173,524	2	5,501	4,465	277	15	1,252
8,247	0	6,453	1,272	1	0	110
412,342	338	26,847	2,580	472	24	5,577
274,782	396	14,351	21,665	21,143	136	80,226
251,382	1,974	6,557	8,720	2,441	90	11,768
278	0	0	98	1	2	3,295
153,002	190	50,764	679	585	12	9,850
9,970	0	2	661	0	0	546
70,714	1	440	454	31	0	302
120,207	1	100	557	44	21	1,103
50,631	0	77	256	79	10	352
110,721	1	74	288	67	44	3,117
40,960	2	54,188	1,784	269	3	13,202
216,295	2,693	24,042	6,351	2,502	282	35,222
56,418	2,160	630,845	6,643	6,831	465	20,924
39,217	5,018	32,111	1,365	6,161	669	13,073
68,917	2,164	117,616	9,882	48,769	366	12,313
63,984	395	58,741	16,052	164,427	1,832	41,438
55,776	377	543,038	19,990	100,005	1,130	102,615

1988

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	4,461,474	351,925	938,230	234,432
0/1 Professional, Technical and Related Workers	180,710	4,929	3,268	1,111
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	176,645	4,676	3,167	1,085
027/038 Mining Engineers and Technicians	240	0	16	2
026/037 Metallurgists and Metallurgical Technicians	14,712	1	3	0
024/035 Mechanical Engineers and Technicians	69,875	856	322	211
023/034 Electrical, Electronics Engineers and Technicians	39,097	553	323	169
025/036 Chemical Engineers and Technicians	18,911	250	269	13
022/033 Civil Engineers and Technicians	3,546	30	29	9
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	30,264	2,986	2,205	681
04 Aircraft and Ships Officers	899	35	0	6
06/07 Medical, Dental, Veterinary and Related Workers	1,416	177	46	13
061 Medical Doctors	216	7	5	2
063 Dentist	45	0	2	0
067 Pharmacists	293	5	1	0
071 Professional Nurses	505	39	26	6
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	357	126	12	5
11 Accountants	151	22	2	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	1,599	19	53	7
2. Administrarive and Managerial	111,088	4,621	34,344	3,644
3. Clerical and Related Workers	589,139	48,525	135,851	12,741
4. Sales Workers	150,122	33,277	28,296	3,202
5. Service Workers	129,037	4,018	75,132	1,829

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
261,520	601,875	214,380	316,384	1,259,857	282,871
2,688	18,226	10,166	39,718	95,297	5,307
0	0	0	0	0	0
2,238	17,644	9,846	39,285	94,000	4,704
0	19	153	37	13	0
35	33	5	8,260	6,314	61
473	1,777	1,871	9,663	53,891	811
435	1,115	1,307	7,824	26,918	453
101	12,337	458	2,858	853	1,772
51	208	646	1,791	677	105
1,143	2,155	5,406	8,852	5,334	1,502
20	18	178	71	567	4
33	435	79	297	306	30
3	51	12	55	79	2
3	8	0	20	8	4
1	172	2	49	61	2
20	141	49	106	107	11
6	63	16	67	51	11
0	0	0	0	37	86
0	0	0	0	0	0
397	125	63	65	387	483
9,291	28,509	3,330	1,183	18,461	7,705
34,599	191,829	16,789	12,987	122,229	13,589
11,650	36,977	4,084	1,104	27,173	4,359
5,186	22,842	1,117	1,579	14,759	2,575

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,842	628	263	0
7/8/9 Production and Related Workers	3,299,536	255,927	661,076	211,905
71 Miners, Quqrrymen, Well Drillers and Related Workers	1,605	148	6	0
72 Metal Processors	138,508	26	62	127
73 Wood Preparation Workers and Paper Makers	31,383	132	19	13,818
74 Chemical Processors and Related Workers	100,606	402	312	14
75 Spinners, Weavers, Knitters, Dyers and Related Workers	307,217	188	293,063	112
76 Tanners, Fellmongers and Pelt Dressors	3,804	3	3,702	0
77 Food and Beverage Processors	197,207	196,097	138	82
78 Tobacco Preparers and Tobacco Product Makers	5,990	5,670	270	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	308,159	329	293,865	1,155
80 Shoemakers and Leather Good Makers	27,690	16	18,096	36
81 Cabinet Makers and Related Wood Workers	173,524	329	306	151,001
82 Stone Cutters and Carvers	8,247	5	23	1
83 Blacksmiths, Hammersmiths and Forging Press Operators	412,342	316	909	7,139
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	274,782	4,668	15,378	987
85 Electrical Fitters and Related Electrical and Electronics Workers	251,382	417	656	308
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	278	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	153,002	434	394	2,013
88 Jewllery and Precious Metal Workers	9,970	0	4	77
89 Glass Formers, Potters and Related Workers	70,714	24	20	101
90 Rubber and Plastics Product Makers	120,207	36	231	132
91 Paper and Paperboard Products Makers	50,631	174	1,544	275
92 Printers and Related Workers	110,721	99	118	65
93 Painters	40,960	90	1,066	8,762
94 Production and Related Workers, n.e.c	216,295	22,897	15,075	3,116
95 Bricklayer, Carpenters and Construction Workers	56,418	463	512	2,972
96 Stationary Engine and Related Equipment Operators	39,217	2,778	1,654	1,154
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	68,917	6,622	4,728	5,119
98 Transport Equipment Operators	63,984	7,417	4,030	6,054
99 Labourers, n.e.c	55,776	6,146	4,895	7,285

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	698	17	7	169	60
198,106	302,794	178,877	259,806	981,769	249,276
0	460	886	50	40	15
88	705	486	115,736	20,622	656
17,085	175	0	23	102	29
300	95,351	562	1,247	628	1,790
91	10,856	643	75	222	1,967
0	51	0	0	1	47
22	790	6	0	16	56
0	50	0	0	0	0
317	7,198	53	32	482	4,728
6	8,720	9	0	29	778
464	395	307	474	3,103	17,145
0	3	8,131	0	35	49
745	3,443	4,663	45,564	327,283	22,280
3,110	24,150	4,286	17,390	200,557	4,256
370	2,059	1,075	21,754	222,581	2,162
18	0	0	0	210	49
240	2,759	1,879	18,592	124,996	1,695
0	0	26	23	313	9,527
82	730	66,558	240	1,432	1,527
289	72,975	98	169	886	45,391
47,375	517	55	20	78	593
107,698	483	284	121	774	1,079
371	1,220	382	820	12,935	15,314
4,042	25,320	17,001	3,371	25,227	100,246
450	2,321	37,628	2,413	4,916	4,743
1,997	9,612	3,831	12,076	5,555	560
5,252	15,160	7,148	8,786	11,299	4,803
4,176	8,856	16,480	5,241	8,087	3,643
3,518	8,435	6,400	5,589	9,360	4,148

1989

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	17,632,976	4,094,999	135,853
0/1 Professional, Technical and Related Workers	1,322,183	4,525	5,124
01 Physical Scientists	7,411	0	0
02/03 Architects, Engineer, and Related Technicians	357,999	2,011	4,685
027/038 Mining Engineers and Technicians	3,446	0	3,122
026/037 Metallurgists and Metallurgical Technicians	15,261	1	132
024/035 Mechanical Engineers and Technicians	83,577	10	294
023/034 Electrical, Electronics Engineers and Technicians	62,930	59	241
025/036 Chemical Engineers and Technicians	20,998	0	98
022/033 Civil Engineers and Technicians	71,458	421	379
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	100,329	1,520	419
04 Aircraft and Ships Officers	44,887	1,087	0
06/07 Medical, Dental, Veterinary and Related Workers	369,206	110	121
061 Medical Doctors	68,471	14	6
063 Dentist	15,283	0	0
067 Pharmacists	24,620	0	11
071 Professional Nurses	136,804	16	60
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	124,028	80	44
11 Accountants	11,057	1	0
13 Teacher	428,451	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	103,172	1,316	318
2. Administrarive and Managerial	328,537	2,010	3,206
3. Clerical and Related Workers	2,018,972	5,130	8,860
4. Sales Workers	2,338,021	1,843	388
5. Service Workers	1,468,106	1,366	1,190

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
4,621,424	40,739	2,075,980	2,788,543	668,385	321,931	2,885,129
187,418	4,343	143,779	35,917	76,429	19,638	845,010
0	0	0	0	0	0	7,411
183,968	4,152	120,293	7,041	15,966	11,879	8,004
189	0	84	0	0	0	51
15,000	1	22	22	7	3	73
70,700	126	7,305	965	3,424	269	484
42,090	1,691	9,304	1,264	6,793	899	589
20,043	87	286	258	11	11	204
3,833	1,835	51,353	594	5,118	4,784	3 141
32,113	412	51,939	3,938	613	5,913	3,462
886	0	804	158	41,331	0	621
1,383	90	295	21,531	707	1,978	342,991
229	3	4	45	202	748	67,220
49	0	4	4	20	73	15,133
216	0	68	13,816	58	154	10,297
519	29	24	228	211	372	135,345
370	58	195	7,438	216	631	114 996
105	11	33	67	17	147	10,676
0	0	0	0	0	0	428,451
1,076	90	22,354	7,120	18,408	5,634	46,856
114,350	525	51,253	6,159	63,974	12,017	75,043
615,182	17,009	146,814	115,885	185,260	186,573	738,259
163,769	1,266	14,499	2,041,464	5,815	82,337	26,640
167,457	1,414	27,960	434,991	44,304	16,637	772,787

1989 **Manpower Demand by Industry**

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	4,085,632	4,059,743	11,170
7/8/9 Production and Related Workers	6,071,532	20,382	105,915
71 Miners, Quqrrymen, Well Drillers and Related Workers	74,022	17	65,262
72 Metal Processors	144,155	0	973
73 Wood Preparation Workers and Paper Makers	27,957	8	8
74 Chemical Processors and Related Workers	107,847	14	559
75 Spinners, Weavers, Knitters, Dyers and Related Workers	307,215	933	9
76 Tanners, Fellmongers and Pelt Dressors	3,874	0	0
77 Food and Beverage Processors	222,900	2,956	59
78 Tobacco Preparers and Tobacco Product Makers	5,320	7	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	379,305	5	9
80 Shoemakers and Leather Good Makers	29,226	0	0
81 Cabinet Makers and Related Wood Workers	198,489	1,248	44
82 Stone Cutters and Carvers	18,721	33	2,059
83 Blacksmiths, Hammersmiths and Forging Press Operators	476,651	21	287
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	424,792	223	3,178
85 Electrical Fitters and Related Electrical and Electronics Workers	287,529	14	233
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	5,259	1,695	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	226,800	34	520
88 Jewllery and Precious Metal Workers	11,014	9	0
89 Glass Formers, Potters and Related Workers	76,182	9	980
90 Rubber and Plastics Product Makers	123,050	5	9
91 Paper and Paperboard Products Makers	53,936	28	14
92 Printers and Related Workers	117,530	10	5
93 Painters	118,332	3	0
94 Production and Related Workers, n.e.c	294,348	955	61
95 Bricklayer, Carpenters and Construction Workers	723,944	1,219	487
96 Stationary Engine and Related Equipment Operators	112,576	1,178	7,341
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	283,258	1,700	3,917
98 Transport Equipment Operators	344,711	6,374	15,765
99 Labourers, n.e.c	872,589	1,684	4,136

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,892	42	768	5,443	826	131	5,617
3,371,356	16,140	1,690,907	148,684	291,777	4,598	421,773
1,404	6	6,777	41	8	12	495
140,261	1	993	284	216	1	1,426
27,323	0	435	60	34	0	89
102,862	664	240	753	85	0	2,670
298,517	8	231	894	44	0	6,579
3,861	0	0	8	0	0	5
198,671	0	65	17,889	28	2	3,230
5,262	0	0	11	27	0	13
305,529	0	576	18,738	40	2	54,406
27,020	0	0	1,230	7	0	969
184,955	1	5,849	4,915	236	10	1,231
8,482	0	6,642	1,422	1	0	82
436,126	354	30,767	2,874	387	14	5,821
284,089	362	16,009	23,023	17,420	105	80,383
259,582	1,338	5,256	8,022	1,714	61	11,309
196	0	0	70	1	2	3,295
157,061	134	57,571	707	476	8	10,289
9,927	0	2	554	0	0	522
73,908	1	476	473	26	0	309
121,192	1	95	616	35	12	1,085
53,147	0	72	276	70	6	323
114,185	1	64	269	57	31	2,908
44,524	1	58,113	1,432	215	3	14,041
215,684	2,860	27,608	6,975	2,209	265	37,731
59,241	2,152	625,761	7,008	5,989	409	21,678
41,812	5,263	36,006	1,296	5,405	605	13,670
75,264	2,291	134,792	11,003	41,194	348	12,749
66,374	384	66,609	16,999	127,722	1,644	42,840
54,897	318	609,898	20,842	88,131	1,058	91,625

1989

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	4,621,424	356,787	985,693	242,736
0/1 Professional, Technical and Related Workers	187,418	4,771	2,576	1,150
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	183,968	4,526	2,513	1,125
027/038 Mining Engineers and Technicians	189	0	9	2
026/037 Metallurgists and Metallurgical Technicians	15,000	2	2	0
024/035 Mechanical Engineers and Technicians	70,700	701	240	177
023/034 Electrical, Electronics Engineers and Technicians	42,090	549	263	163
025/036 Chemical Engineers and Technicians	20,043	232	211	13
022/033 Civil Engineers and Technicians	3,833	26	25	10
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	32,113	3,016	1,763	760
04 Aircraft and Ships Officers	886	36	0	5
06/07 Medical, Dental, Veterinary and Related Workers	1,383	182	33	14
061 Medical Doctors	229	8	4	2
063 Dentist	49	0	2	0
067 Pharmacists	216	6	0	0
071 Professional Nurses	519	43	18	7
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	370	125	9	5
11 Accountants	105	14	1	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	1,076	13	29	6
2. Administrarive and Managerial	114,350	4,172	38,293	3,722
3. Clerical and Related Workers	615,182	48,649	151,788	13,133
4. Sales Workers	163,769	36,000	31,665	3,279
5. Service Workers	167,457	3,598	113,340	1,681

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
267,815	630,382	221,039	330,134	1 293,089	293,749
2,328	18,777	10,498	41,754	99,921	5 643
0	0	0	0	0	0
2,049	18,328	10,172	41,297	98,761	5,197
0	14	129	26	9	0
21	25	6	8,284	6,610	50
390	1,672	1,669	9,729	55,286	836
400	1,115	1,385	8,392	29,300	523
96	13,164	495	2,868	864	2,100
48	209	685	2,001	739	90
1,094	2,129	5,803	9,997	5,953	1,598
19	20	198	80	523	5
30	339	83	330	337	35
3	43	13	60	94	2
3	6	0	24	9	5
1	120	2	39	46	2
17	117	50	127	127	13
6	53	18	80	61	13
0	3	0	0	26	61
0	0	0	0	0	0
230	87	45	47	274	345
8,892	30,754	3,341	1,262	16,470	7,444
34,095	207,750	17,183	12,292	116,148	14,144
11,545	39,889	4,391	1,107	31,045	4,848
5,352	24,641	1,168	1,568	13,266	2,843

1989

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,892	677	259	0
7/8/9 Production and Related Workers	3,371,356	258,920	647,772	219,771
71 Miners, Quqrrymen, Well Drillers and Related Workers	1,404	102	4	0
72 Metal Processors	140,261	22	46	115
73 Wood Preparation Workers and Paper Makers	27,323	89	13	9,566
74 Chemical Processors and Related Workers	102,862	407	279	16
75 Spinners, Weavers, Knitters, Dyers and Related Workers	298,517	189	283,636	96
76 Tanners, Fellmongers and Pelt Dressors	3,861	3	3,760	0
77 Food and Beverage Processors	198,671	197,564	99	58
78 Tobacco Preparers and Tobacco Product Makers	5,262	5,052	176	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	305,529	309	290,542	1,128
80 Shoemakers and Leather Good Makers	27,020	12	16,678	31
81 Cabinet Makers and Related Wood Workers	184,955	298	252	160,422
82 Stone Cutters and Carvers	8,482	5	15	1
83 Blacksmiths, Hammersmiths and Forging Press Operators	436,126	332	905	7,930
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	284,089	4,697	15,599	995
85 Electrical Fitters and Related Electrical and Electronics Workers	259,582	340	574	293
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	196	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	157,061	437	364	2,194
88 Jewllery and Precious Metal Workers	9,927	0	4	54
89 Glass Formers, Potters and Related Workers	73,908	21	21	95
90 Rubber and Plastics Product Makers	121,192	39	232	147
91 Paper and Paperboard Products Makers	53,147	153	1,624	265
92 Printers and Related Workers	114,185	79	121	68
93 Painters	44,524	90	1,119	9,568
94 Production and Related Workers, n.e.c	215,684	24,845	15,793	3,243
95 Bricklayer, Carpenters and Construction Workers	59,241	465	441	2,470
96 Stationary Engine and Related Equipment Operators	41,812	2,843	1,585	1,241
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	75,264	7,075	4,975	5,600
98 Transport Equipment Operators	66,374	7,450	3,990	6,561
99 Labourers, n.e.c	54,897	6,001	4,925	7,614

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	753	13	5	139	46
205,603	307,818	184,445	272,146	1,016,100	258,781
0	328	884	45	30	11
95	724	492	119,405	18,728	634
17,358	191	0	16	70	20
323	97,472	522	1,367	539	1,937
95	11,678	703	59	200	1,861
0	56	0	0	1	41
25	859	6	0	13	47
0	34	0	0	0	0
288	7,772	55	36	468	4,931
6	9,407	10	0	27	849
515	426	305	533	3,340	18,864
0	3	8,382	0	28	48
786	3,569	5,058	47,761	344,945	24,840
3,308	25,555	4,556	18,597	206,129	4,653
351	2,019	1,098	24,129	228,426	2,352
13	0	0	0	146	36
238	2,178	2,028	19,087	128,144	1,851
0	0	25	21	310	9,513
79	746	69,734	271	1,339	1,602
274	68,635	103	184	964	50,614
49,748	530	61	23	87	656
111,025	492	314	110	782	1,194
409	1,160	410	872	13,871	17,025
4,430	27,537	12,750	3,777	27,708	95,601
405	2,431	41,037	2,210	4,554	5,228
2,068	10,185	4,205	13,475	5,596	614
5,859	16,497	7,777	9,684	12,437	5,360
4,391	8,705	17,883	5,334	8,083	3,977
3,514	8,089	6,047	5,150	9,135	4,422

1990

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	18,035,968	3,961,999	137,890
0/1 Professional, Technical and Related Workers	1,435,057	4,551	5,299
01 Physical Scientists	7,857	0	0
02/03 Architects, Engineer, and Related Technicians	396,759	2,109	4,819
027/038 Mining Engineers and Technicians	3,542	0	3,275
026/037 Metallurgists and Metallurgical Technicians	15,462	2	98
024/035 Mechanical Engineers and Technicians	86,209	11	273
023/034 Electrical, Electronics Engineers and Technicians	70,671	34	230
025/036 Chemical Engineers and Technicians	22,140	0	99
022/033 Civil Engineers and Technicians	79,726	441	410
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	119,009	1,621	434
04 Aircraft and Ships Officers	56,125	914	0
06/07 Medical, Dental, Veterinary and Related Workers	400,386	118	133
061 Medical Doctors	74,011	16	6
063 Dentist	17,012	0	0
067 Pharmacists	24,562	0	12
071 Professional Nurses	152,251	19	66
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	132,550	83	49
11 Accountants	12,197	0	0
13 Teacher	448,439	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	113,294	1,410	347
2. Administrarive and Managerial	371,317	2,112	3,196
3. Clerical and Related Workers	2,124,281	5,164	8,965
4. Sales Workers	2,424,305	1,843	405
5. Service Workers	1,542,234	1,365	1,396

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
4,786,968	41,008	2,269,423	2,867,148	675,169	336,358	2,960,017
194,217	4,417	174,561	40,083	101,125	20,292	890,512
0	0	0	0	0	0	7,857
191,386	4,231	144,252	8,242	21,672	12,587	7,461
134	0	107	0	0	0	26
15,250	1	28	27	11	2	43
71,373	126	8,995	1,105	3,694	218	414
45,212	1,605	11,234	1,288	9,666	912	490
21,238	95	259	288	16	8	137
4,132	1,955	56,943	606	7,410	4 823	3,006
34,047	449	66,686	4,928	875	6,624	3,345
866	0	1,029	184	52,485	0	647
1,353	98	384	23,660	1,002	2,191	371,447
243	4	5	53	286	828	72,570
54	0	5	4	28	81	16,840
139	0	88	14,578	82	171	9,492
534	31	31	268	300	412	150,590
383	63	255	8,757	306	699	121,955
54	5	20	37	11	76	11,994
0	0	0	0	0	0	448,439
558	83	28,876	7,960	25,955	5,438	42,667
117,972	497	61,904	6,204	84,465	12,621	82,346
642,399	17,422	176,427	122,436	200,816	197,474	753,178
178,194	1,598	17,268	2,106,183	6,569	84,212	28,033
223,567	1,163	33,056	431,489	52,183	17,520	780,495

Manpower Demand by Industry

1990

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	3,952,788	3,926,646	11,088
7/8/9 Production and Related Workers	6,185,998	20,318	107,541
71 Miners, Quqrrymen, Well Drillers and Related Workers	74,184	18	64,729
72 Metal Processors	144,976	0	1,039
73 Wood Preparation Workers and Paper Makers	23,179	4	4
74 Chemical Processors and Related Workers	109,713	8	428
75 Spinners, Weavers, Knitters, Dyers and Related Workers	297,530	991	4
76 Tanners, Fellmongers and Pelt Dressors	3,911	0	0
77 Food and Beverage Processors	225,399	3,108	30
78 Tobacco Preparers and Tobacco Product Makers	4,536	3	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	379,054	4	8
80 Shoemakers and Leather Good Makers	28,194	0	0
81 Cabinet Makers and Related Wood Workers	210,241	1,331	48
82 Stone Cutters and Carvers	19,143	34	1,977
83 Blacksmiths, Hammersmiths and Forging Press Operators	503,687	23	300
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	432,170	220	3,283
85 Electrical Fitters and Related Electrical and Electronics Workers	290,406	12	177
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	5,241	1,811	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	237,695	35	539
88 Jewllery and Precious Metal Workers	10,753	9	0
89 Glass Formers, Potters and Related Workers	79,231	9	1,061
90 Rubber and Plastics Product Makers	123,605	6	10
91 Paper and Paperboard Products Makers	56,213	30	15
92 Printers and Related Workers	120,126	5	5
93 Painters	126,258	4	0
94 Production and Related Workers, n.e.c	298,811	1,013	36
95 Bricklayer, Carpenters and Construction Workers	716,477	1,248	510
96 Stationary Engine and Related Equipment Operators	119,708	1,253	7,978
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	302,042	1,760	4,044
98 Transport Equipment Operators	324,669	5,717	17,003
99 Labourers, n.e.c	918,846	1,662	4,313

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
1,952	64	706	5,503	860	107	5,862
3,428,667	15,847	1,805,501	155,250	229,151	4,132	419,591
1,188	5	7,657	46	7	11	523
140,992	1	1,024	243	181	1	1,495
22,784	0	245	31	29	0	82
104,708	694	250	750	71	0	2,804
289,034	4	171	777	36	0	6,513
3,899	0	0	7	0	0	5
199,321	0	43	19,521	23	1	3,352
4,504	0	0	13	10	0	6
301,825	0	575	18,812	33	2	57,795
26,325	0	0	1,029	6	0	834
195,856	1	6,207	5,396	191	6	1,205
8,679	0	6,814	1,583	1	0	55
458,423	367	35,035	3,189	303	7	6,040
292,079	327	17,794	24,457	13,702	78	80,230
266,563	715	3,733	7,244	1,115	36	10,811
105	0	0	39	1	2	3 283
160,292	79	64,952	737	370	5	10,686
9,808	0	2	437	0	0	497
76,816	1	514	493	21	0	316
121,725	1	90	678	27	6	1,062
55,449	0	66	297	59	3	294
117,060	2	53	246	46	21	2,688
48,021	1	62,198	1,045	165	3	14,821
213,440	3,008	31,491	7,642	1,853	249	40,079
61,837	2,135	615,658	7,391	4,994	360	22,344
44,309	5,474	40,208	1,218	4,509	547	14,212
81,484	2,402	153,489	12,203	33,196	330	13,134
68,513	370	75,140	17,998	94,383	1,475	44,070
53,628	260	682,092	21,728	73,819	989	80,355

Manpower Demand by Industry

1990

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
00 TOTAL	4,786,968	360,411	1,048,180	250,026
0/1 Professional, Technical and Related Workers	194,217	4,614	1,895	1,190
01 Physical Scientists	0	0	0	0
02/03 Architects, Engineer, and Related Technicians	191,386	4,379	1,861	1,166
027/038 Mining Engineers and Technicians	134	0	3	1
026/037 Metallurgists and Metallurgical Technicians	15,250	2	1	0
024/035 Mechanical Engineers and Technicians	71,373	555	167	140
023/034 Electrical, Electronics Engineers and Technicians	45,212	544	200	156
025/036 Chemical Engineers and Technicians	21,238	216	154	14
022/033 Civil Engineers and Technicians	4,132	22	20	11
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	34,047	3,040	1,316	844
04 Aircraft and Ships Officers	866	38	0	3
06/07 Medical, Dental, Veterinary and Related Workers	1,353	183	23	16
061 Medical Doctors	243	8	3	2
063 Dentist	54	0	1	0
067 Pharmacists	139	6	0	0
071 Professional Nurses	534	46	12	8
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	383	123	7	6
11 Accountants	54	7	0	0
13 Teacher	0	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	558	7	11	5
2. Administrative and Managerial	117,972	3,746	42,172	3,802
3. Clerical and Related Workers	642,399	48,513	167,515	13,536
4. Sales Workers	178,194	38,739	35,001	3,358
5. Service Workers	223,567	3,205	168,880	1,545

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
273,082	659,992	226,907	342,559	1,322,345	303,466
1,976	19,339	10,837	43,803	104,585	5,978
0	0	0	0	0	0
1,833	19,030	10,505	43,320	103,579	5,713
0	8	104	13	5	0
10	16	7	8,271	6,908	35
311	1,556	1,451	9,756	56,584	853
358	1,113	1,466	8,979	31,797	599
88	14,032	532	2,865	872	2,465
45	209	727	2,223	804	71
1,021	2,096	6,218	11,213	6,609	1,690
17	22	219	90	472	5
27	240	87	366	371	40
3	33	14	66	111	3
3	5	0	29	10	6
1	74	2	25	28	3
14	88	51	151	150	14
6	40	20	95	72	14
0	1	0	0	14	32
0	0	0	0	0	0
99	46	26	27	149	188
8,498	33,227	3,352	1,344	14,650	7,181
33,548	225,338	17,590	11,619	110,040	14,700
11,424	43,096	4,723	1,108	35,362	5,383
5,515	26,623	1,221	1,555	11,889	3,134

1990

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather	(33) Wood and wooden products
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	1,952	726	252	0
7/8/9 Production and Related Workers	3,428,667	260,868	632,465	226,595
71 Miners, Quqrrymen, Well Drillers and Related Workers	1,188	54	2	0
72 Metal Processors	140,992	18	30	101
73 Wood Preparation Workers and Paper Makers	22,784	45	6	4,950
74 Chemical Processors and Related Workers	104,708	410	247	18
75 Spinners, Weavers, Knitters, Dyers and Related Workers	289,034	189	273,487	77
76 Tanners, Fellmongers and Pelt Dressors	3,899	3	3,800	0
77 Food and Beverage Processors	199,321	198,221	61	32
78 Tobacco Preparers and Tobacco Product Makers	4,504	4,401	86	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	301,825	287	286,206	1,091
80 Shoemakers and Leather Good Makers	26,325	9	15,256	27
81 Cabinet Makers and Related Wood Workers	195,856	264	199	169,341
82 Stone Cutters and Carvers	8,679	6	7	1
83 Blacksmiths, Hammersmiths and Forging Press Operators	458,423	346	898	8,719
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	292,079	4,706	15,749	996
85 Electrical Fitters and Related Electrical and Electronics Workers	266,563	260	494	275
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	105	1	0	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	160,292	438	334	2,372
88 Jewllery and Precious Metal Workers	9,808	0	5	28
89 Glass Formers, Potters and Related Workers	76,816	16	22	87
90 Rubber and Plastics Product Makers	121,725	42	232	163
91 Paper and Paperboard Products Makers	55,449	131	1,694	252
92 Printers and Related Workers	117,060	58	123	71
93 Painters	48,021	90	1,166	10,360
94 Production and Related Workers, n.e.c	213,440	26,726	16,417	3,355
95 Bricklayer, Carpenters and Construction Workers	61,837	464	371	1,914
96 Stationary Engine and Related Equipment Operators	44,309	2,897	1,512	1,324
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	81,484	7,506	5,192	6,075
98 Transport Equipment Operators	68,513	7,452	3,935	7,056
99 Labourers, n.e.c	53,628	5,828	4,934	7,910

and Occupation (continue)

(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	813	9	4	114	34
212,121	311,556	189,175	283,126	1,045,705	267,056
0	190	877	39	19	7
101	740	494	122,321	16,581	606
17,522	207	0	8	36	10
346	99,204	477	1,486	440	2,080
97	12,469	763	42	176	1,734
0	60	0	0	1	35
28	926	6	0	10	37
0	17	0	0	0	0
256	8,326	58	40	450	5,111
7	10,071	11	0	25	919
566	456	300	592	3,571	20,567
0	3	8,595	0	21	46
824	3,681	5,444	49,722	361,390	27,399
3,495	26,883	4,813	19,744	210,649	5,044
327	1,969	1,115	26,499	233,085	2,539
7	0	0	0	76	21
235	2,664	2,172	19,454	130,619	2 004
0	0	24	19	305	9,427
74	759	72,653	302	1,232	1,671
256	63,851	107	198	1,041	55,835
51,925	540	67	25	96	719
113,774	498	345	97	785	1,309
447	1,093	437	921	14,774	18,733
4,813	29,690	8,173	4,184	30,161	89.921
355	2,533	44,385	1,969	4,137	5,709
2,128	10,727	4,575	14,877	5,602	667
6,465	17,796	8,393	10,575	13,565	5,917
4,589	8,508	19,255	5,388	8,024	4,306
3,484	7,695	5,636	4,624	8,834	4,683

1991

Manpower Demand by

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
00 TOTAL	18,453,952	3,821,998	139,898
0/1 Professional, Technical and Related Workers	1,555,592	4,565	5,480
01 Physical Scientists	8,300	0	0
02/03 Architects, Engineer, and Related Technicians	440,680	2,203	4,955
027/038 Mining Engineers and Technicians	3,654	0	3,433
026/037 Metallurgists and Metallurgical Technicians	15,620	2	62
024/035 Mechanical Engineers and Technicians	88,596	13	250
023/034 Electrical, Electronics Engineers and Technicians	79,411	7	218
025/036 Chemical Engineers and Technicians	23,325	0	100
022/033 Civil Engineers and Technicians	88,455	461	443
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	141,619	1,720	449
04 Aircraft and Ships Officers	67,352	737	0
06/07 Medical, Dental, Veterinary and Related Workers	432,458	124	147
061 Medical Doctors	79,653	18	7
063 Dentist	18,841	0	0
067 Pharmacists	24,282	0	13
071 Professional Nurses	168,592	21	73
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	141,090	85	54
11 Accountants	13,374	0	0
13 Teacher	467,635	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	125,793	1,501	378
2. Administrarive and Managerial	418,284	2,213	3,184
3. Clerical and Related Workers	2,225,660	5,182	9,065
4. Sales Workers	2,513,576	1,838	423
5. Service Workers	1,636,777	1,359	1,636

Industry and Occupation

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
4,960,456	41,230	2,481,441	2,948,749	681,068	351,594	3,027,522
200,993	4,474	211,470	44,734	127,850	20,965	935,061
0	0	0	0	0	0	8,300
198,794	4,292	172,579	9,629	28,087	13,327	6,814
79	0	137	0	0	0	5
15,454	1	35	34	15	0	17
71,846	125	11,043	1,263	3,551	160	345
48,442	1,508	13,533	1,280	13,106	923	394
22,491	102	208	321	22	4	77
4,437	2,070	62,576	603	10,204	4,846	2,815
36,045	486	85,047	6,128	1,189	7,394	3,161
843	0	1,311	214	63,575	0	672
1,315	106	495	25,993	1,351	2,414	400,513
254	4	6	62	386	913	78,003
59	0	6	5	38	89	18,644
61	0	114	15,350	110	188	8,446
547	34	40	314	404	454	166,705
394	68	329	10,262	413	770	128,715
0	0	0	0	0	0	13,374
0	0	0	0	0	0	467,635
41	76	37,085	8,898	34,837	5,224	37,753
121,714	468	74,606	6,249	106,562	13,255	90,033
670,146	17,753	211,550	129,348	208,006	208,998	765,612
193,398	2,008	20,520	2,172,783	7,090	86,125	29,391
303,246	952	38,995	427,982	38,734	18,450	785,423

1991

Manpower Demand by Industry

Occupations	TOTAL	(1) Agri., forestry & fishery	(2) Mining
6. Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	3,813,020	3,786,647	10,998
7/8/9 Production and Related Workers	6,291,047	20,194	109,112
71 Miners, Quqrrymen, Well Drillers and Related Workers	74,320	18	64,115
72 Metal Processors	144,707	0	1,107
73 Wood Preparation Workers and Paper Makers	17,955	0	0
74 Chemical Processors and Related Workers	111,060	2	292
75 Spinners, Weavers, Knitters, Dyers and Related Workers	286,948	1,046	0
76 Tanners, Fellmongers and Pelt Dressors	3,927	0	0
77 Food and Beverage Processors	227,045	3,250	0
78 Tobacco Preparers and Tobacco Product Makers	3,736	0	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	377,304	4	6
80 Shoemakers and Leather Good Makers	27,094	0	0
81 Cabinet Makers and Related Wood Workers	221,250	1,410	52
82 Stone Cutters and Carvers	19,500	34	1,890
83 Blacksmiths, Hammersmiths and Forging Press Operators	529,056	24	313
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	438,220	217	3,389
85 Electrical Fitters and Related Electrical and Electronics Workers	291,659	10	120
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	5,198	1,920	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	248,185	36	559
88 Jewllery and Precious Metal Workers	10,399	10	0
89 Glass Formers, Potters and Related Workers	81,924	10	1,143
90 Rubber and Plastics Product Makers	123,631	6	10
91 Paper and Paperboard Products Makers	58,218	32	16
92 Printers and Related Workers	122,036	0	6
93 Painters	134,079	4	0
94 Production and Related Workers, n.e.c	301,727	1,067	10
95 Bricklayer, Carpenters and Construction Workers	703,045	1,273	533
96 Stationary Engine and Related Equipment Operators	126,869	1,324	8,627
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	322,461	1,814	4,172
98 Transport Equipment Operators	310,221	5,048	18,261
99 Labourers, n.e.c	969,273	1,635	4,491

and Occupation (continue)

(3) Manufact.	(4) Electric, gas and water	(5) Construction	(6) Commerce, hotel & restaruant	(7) Transportation, warehouse, & communication	(8) Bank, insurance real estate	(9) Social overhead capital & service
2,027	98	647	5,563	856	88	6,096
3,468,932	15,477	1,923,653	162,090	171,970	3,713	415,906
962	3	8,606	51	5	11	549
140,645	1	1,053	198	144	1	1,558
17,830	0	27	0	23	0	75
106,059	720	260	745	57	0	2,925
278,698	0	101	649	29	0	6,425
3,916	0	0	6	0	0	5
199,036	0	19	21,261	18	1	3,460
3,722	0	0	14	0	0	0
296,914	0	570	18,855	27	2	60,926
25,584	0	0	807	5	0	698
205,982	0	6,572	5,909	147	3	1,175
8,831	0	6,962	1,755	1	0	27
478,703	377	39,653	3,525	226	1	6,234
298,506	292	19,703	25,971	10,299	56	79,787
272,098	115	1,976	6,381	663	16	10,280
9	0	0	6	1	2	3,260
162,575	25	72,909	767	274	2	11,038
9,608	0	3	308	0	0	470
79,366	1	554	513	16	0	321
121,732	1	82	745	19	0	1,036
57,482	0	58	319	47	0	264
119,255	2	40	222	36	13	2,462
51,372	0	66,424	620	120	3	15,536
209,509	3,133	35,696	8,353	1,479	233	42,247
64,138	2,106	600,000	7,793	3,966	316	22,920
46,654	5,647	44,716	1,131	3,582	494	14,694
87,448	2,496	173,722	13,486	25,546	312	13,465
70,338	356	84,337	19,050	66,386	1,324	45,121
51,960	202	759,610	22,650	58,854	923	68,948

1991

Manpower Demand by

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather
00 TOTAL	4,960,456	363,033	1,129,688
0/1 Professional, Technical and Related Workers	200,993	4,463	1,226
01 Physical Scientists	0	0	0
02/03 Architects, Engineer, and Related Technicians	198,794	4,237	1,211
027/038 Mining Engineers and Technicians	79	0	0
026/037 Metallurgists and Metallurgical Technicians	15,454	2	1
024/035 Mechanical Engineers and Technicians	71,846	418	101
023/034 Electrical, Electronics Engineers and Technicians	48,442	539	133
025/036 Chemical Engineers and Technicians	22,491	201	99
022/033 Civil Engineers and Technicians	4,437	18	14
021, 028, 029, 031, 032, 039, Other Engineers and Technicians	36,045	3,059	863
04 Aircraft and Ships Officers	843	39	0
06/07 Medical, Dental, Veterinary and Related Workers	1,315	186	14
061 Medical Doctors	254	9	2
063 Dentist	59	0	1
067 Pharmacists	61	7	0
071 Professional Nurses	547	50	7
062, 064, 065, 066, 068, 069, 072-079 Other Medical Workers	394	120	4
11 Accountants	0	0	0
13 Teacher	0	0	0
05, 08, 09, 12-19 Other Professional, Technical and Related Workers	41	1	1
2. Administrative and Managerial	121,714	3,360	45,698
3. Clerical and Related Workers	670,146	48,328	181,905
4. Sales Workers	193,398	41,644	38,067
5. Service Workers	303,246	2,852	247,599

Industry and Occupation (continue)

(33) Wood and wooden products	(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
256,101	277,139	690,803	231,819	353,366	1,346,716	311,791
1,225	1,628	19,899	11,176	45,846	109,219	6,311
0	0	0	0	0	0	0
1,204	1,587	19,741	10,837	45,337	108,389	6,251
0	0	2	77	0	0	0
0	0	6	7	8,218	7,203	17
100	236	1,427	1,216	9,739	57,748	861
149	311	1,107	1,549	9,581	34,391	682
13	79	14,934	572	2,848	877	2,868
12	40	209	769	2,457	871	47
930	921	2,056	6,647	12,494	7,299	1,776
2	15	24	241	101	415	6
16	24	132	92	403	404	44
2	2	19	16	72	129	3
0	3	3	0	34	12	6
0	1	35	2	8	5	3
8	12	51	52	177	174	16
6	6	24	22	112	84	16
0	0	0	0	0	0	0
0	0	0	0	0	0	0
3	2	2	6	5	11	10
3,883	8,109	35,957	3,365	1,429	12,994	6,919
13,950	32,962	244,813	18,008	10,967	103,956	15,257
3,438	11,288	46,638	5,079	1,108	40,166	5,970
1,420	5,675	28,811	1,277	1,539	10,624	3,449

1991

Manpower Demand by Industry

Occupations	TOTAL	(31) Food & Tobacco	(32) Textile, clothes & leather
6 Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	2,027	777	242
7/8/9 Production and Related Workers	3,468,932	261,609	614,951
71 Miners, Quqrrymen, Well Drillers and Related Workers	962	6	0
72 Metal Processors	140,645	14	16
73 Wood Preparation Workers and Paper Makers	17,830	0	0
74 Chemical Processors and Related Workers	106,059	411	215
75 Spinners, Weavers, Knitters, Dyers and Related Workers	278,698	188	262,564
76 Tanners, Fellmongers and Pelt Dressors	3,916	3	3,820
77 Food and Beverage Processors	199,036	197,951	25
78 Tobacco Preparers and Tobacco Product Makers	3,722	3,722	0
79 Tailers, Dressmakers, Sewers, Upholsterers and Related Workers	296,914	264	280,741
80 Shoemakers and Leather Good Makers	25,584	5	13,833
81 Cabinet Makers and Related Wood Workers	205,982	230	148
82 Stone Cutters and Carvers	8,831	6	0
83 Blacksmiths, Hammersmiths and Forging Press Operators	478,703	358	887
84 Machinery Fitters, Machine Assemblers and Precision Instrument Makers, except Electrical	298,506	4,693	15,816
85 Electrical Fitters and Related Electrical and Electronics Workers	272,098	178	415
86 Broadcasting Station and Sound Equipment Operators and Cinema Projectionists	9	1	0
87 Plumbers, Welders, Sheet Metal and Structural Metal Prepares and Erctrors	162,575	437	304
88 Jewllery and Precious Metal Workers	9,608	0	5
89 Glass Formers, Potters and Related Workers	79,366	12	23
90 Rubber and Plastics Product Makers	121,732	45	231
91 Paper and Paperboard Products Makers	57,482	108	1,753
92 Printers and Related Workers	119,255	36	124
93 Painters	51,372	89	1,204
94 Production and Related Workers, n.e.c	209,509	28,500	16,931
95 Bricklayer, Carpenters and Construction Workers	64,138	462	302
96 Stationary Engine and Related Equipment Operators	46,654	2,938	1,437
97 Material-Handing and Related Equipment Operators, Dockers and Freight Handlers	87,448	7,907	5,373
98 Transport Equipment Operators	70,338	7,419	3,865
99 Labourers, n.e.c	51,960	5,626	4,919

and Occupation (continue)

(33) Wood and wooden products	(34) Paper, paper products, printing and publication	(35) Chemicals, chemical products, petro, coal, rubber & plastic products	(36) Non-metal, petr. and coal products	(37) First metallurgic ind.	(38) Machinery	(39) Others
0	0	880	7	2	93	26
232,185	217,477	313,805	192,907	292,475	1,069,664	273,859
0	0	49	864	33	8	2
86	107	754	494	124,396	14,207	571
38	17,569	223	0	0	0	0
19	368	100,470	427	1,600	333	2,216
57	100	13,212	820	23	148	1,586
0	0	65	0	0	1	27
3	30	989	5	0	6	27
0	0	0	0	0	0	0
1,045	219	8,849	60	44	427	5,265
21	8	10,697	12	0	22	986
177,552	616	484	294	651	3,788	22,219
1	0	3	8,763	0	14	44
9,490	857	3,777	5,813	51,399	376,215	29,907
990	3,669	28,102	5,051	20,805	213,958	5,422
254	300	1,908	1,126	28,816	236,384	2,717
0	1	0	0	0	2	5
2,543	230	2,595	2,310	19,680	132,325	2,151
1	0	0	22	16	297	9,267
79	69	769	75,240	333	1,110	1,731
178	235	58,652	111	212	1,114	60,954
237	53,851	547	73	28	105	780
74	115,857	503	374	82	784	1,421
11,123	483	1,019	462	966	15,622	20,404
3,450	5,182	31,736	3,334	4,586	32,536	83,254
1,314	298	2,624	47,601	1,692	3,669	6,176
1,402	2,177	11,227	4,932	16,254	5,569	718
6,532	7,060	19,031	8,983	11,441	14,658	6,463
7,529	4,765	8,266	20,566	5,399	7,907	4,622
8,167	3,426	7,254	5,170	4,019	8,455	4,924

1970

Professionals and Technicians

Occupations	(001) Agri., forestry & fishery	(002) Agri.	(003) forestry	(004) fishery	(005) Mining & quarrying	(006) Coal	(007) Metal
1. Professionals and Technicians	2	1	16	11	23	0	0
2. Engineers and Technicians	1	0	5	9	19	0	0
3. Engineers	0	0	4	0	17	0	0
4. Civil & Architects	0	0	0	0	2	0	0
5. Electrical	0	0	0	0	1	0	0
6. Mechanical	0	0	0	0	2	0	0
8. Chemical	0	0	0	0	0	0	
9. Metallurgical	0	0	0	0	1	0	0
10. Ind. Specific	0	0	0	0	10	0	0
12. Technicians	0	0	0	0	2	0	0
17. Ind. Specific	0	0	0	0	1	0	0
20. Other	0	0	0	1	1	0	0
21. Natural Scientists	0	0	11	0	0	0	0
23. Other Professional Natural Scientists	0	0	0	0	0	0	0
24. Natural Science Technicians	0	0	11	0	0	0	0
25. Accountants	0	0	0	0	0	0	0
27. Lawyers	0	0	0	0	0	0	0
28. Medical & Health	0	0	0	0	2	0	0
29. Teachers	0	0	0	0	0	0	0
30. Marine & Air Officers	0	0	0	2	2	0	0
31. Industry Specific Professionals and Technicians	1	1	0	0	0	0	0
32. Other Cross Industry Professionals and Technicians	0	0	0	0	0	0	0

Note: The figure in this table means the number of people per 1000 employees in each industry.

Source: Provided by IBRD

by Industry (Japan)

(008) Petroleum & Natural Gas	(009) Quarrying & Other	(010) construction	(011) Manufacturing	(012) Food & Beverages	(013) Tobacco & Tabacco Products	(014) Textile Mill Products	(015) Clothing & Other Fabricated Textiles	(016) Footwear	(017) Leather & Its Products Including Footwear	(018) Leather & Its Products Including Footwear	(019) Furniture & Fixtures
0	0	35	30	12	0	8	9	0	0	7	4
0	0	33	19	6	0	4	0	0	0	2	3
0	0	32	16	2	0	1	0	0	0	0	1
0	0	27	0	0	0	0	0	0	0	0	0
0	0	4	5	1	0	0	0	0	0	0	0
0	0	2	1	1	0	0	0	0	0	0	0
0	0	0	2	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	4	4	0	3	0	0	0	2	2
0	0	0	2	1	0	0	0	0	0	0	0
0	0	0	2	3	0	2	0	0	0	2	2
0	0	0	3	4	0	1	0	0	0	1	0
0	0	0	3	3	0	1	0	0	0	1	0
0	0	0	0	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	2	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0	0	0	0	0
0	0	1	6	1	0	2	8	0	0	4	1
0	0	0	0	0	0	1	0	0	0	0	0

Occupations	(020) Lumber & Wood Products, Except Furniture	(021) Lumber & Wood Products, Including Furniture	(022) Paper & Paper products	(023) Printing & Publishing	(024) Rubber Products	(025) Chemicals & Chemical Products	(026) Petroleum & Coal Products
1. Professionals and Technicians	3	3	14	101	25	87	63
2. Engineers and Technicians	2	2	9	6	18	50	48
3. Engineers	1	1	4	1	14	45	41
4. Civil & Architects	0	0	0	0	0	4	3
5. Electrical	0	0	2	1	1	4	4
6. Mechanical	0	0	1	0	2	5	8
8. Chemical	0	0	1	0	11	35	26
9. Metallurgical	0	0	0	0	0	0	0
10. Ind. Specific	0	0	0	0	0	0	0
12. Technicians	1	1	5	4	4	5	7
17. Ind. Specific	0	0	1	2	1	3	5
20. Other	1	1	4	2	3	2	2
21. Natural Scientists	0	0	3	0	4	28	11
23. Other Professional Natural Scientists	0	0	3	0	4	28	11
24. Natural Science Technicians	0	0	0	0	0	0	0
25. Accountants	0	0	0	0	0	0	0
27. Lawyers	0	0	0	0	0	0	0
28. Medical & Health	0	0	1	0	1	1	2
29. Teachers	0	0	0	0	0	0	0
30. Marine & Air Officers	0	0	0	0	0	0	1
31. Industry Specific Professionals and Technicians	0	1	1	94	2	1	1
32. Other Cross Industry Professionals and Technicians	0	0	0	1	0	1	1

by Industry (Japan)

(027) Stone & Clay Products	(028) Glass, Stone & Glass Products	(029) Metal & Metal Products	(030) Primary Metals	(031) Iron & Steel	(032) Non-ferrous	(033) Fabricated Metal Products	(034) Machinery	(035) Electrical Machinery & Equipment	(036) Transportation Equipment	(037) Motor Vehicles etc.	(038) Professional & Scientific Instruments
0	16	19	35	0	0	9	41	53	46	0	38
0	11	15	29	0	0	7	37	47	40	0	29
0	4	13	24	0	0	6	35	40	36	0	26
0	1	1	1	0	0	1	0	0	1	0	0
0	1	2	5	0	0	1	3	36	2	0	4
0	1	4	5	0	0	4	31	4	32	0	21
0	1	0	1	0	0	0	0	0	0	0	0
0	0	5	12	0	0	1	1	00	1	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	7	2	0	0	0	1	3	7	4	0	3
0	1	1	3	0	0	0	2	6	2	0	1
0	6	1	1	0	0	1	1	1	1	0	1
0	3	2	4	0	0	1	2	4	5	0	4
0	3	2	4	0	0	1	2	4	5	0	4
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	1	1	1	0	3
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0
0	1	0	0	0	0	0	0	1	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0

1970

Professionals and Technicians

Occupations	(039) Manufacturing Miscellaneous (Including Instruments)	(040) Transportation and Warehousing	(041) Railroad	(042) Trucking	(043) Water	(044) Air	(045) Warehousing
1. Professionals and Technicians	14	42	0	0	0	0	0
2. Engineers and Technicians	8	12	0	0	0	0	0
3. Engineers	5	7	0	0	0	0	0
4. Civil & Architects	0	4	0	0	0	0	0
5. Electrical	1	2	0	0	0	0	0
6. Mechanical	1	1	0	0	0	0	0
8. Chemical	3	0	0	0	0	0	0
9. Metallurgical	0	0	0	0	0	0	0
10. Ind. Specific	0	0	0	0	0	0	0
12. Technicians	3	4	0	0	0	0	0
17. Ind. Specific	1	4	0	0	0	0	0
20. Other	2	0	0	0	0	0	0
21. Natural Scientists	2	0	0	0	0	0	0
23. Other Professional Natural Scientists	2	0	0	0	0	0	0
24. Natural Science Technicians	0	0	0	0	0	0	0
25. Accountants	0	0	0	0	0	0	0
27. Lawyers	0	0	0	0	0	0	0
28. Medical & Health	0	0	0	0	0	0	0
29. Teachers	0	0	0	0	0	0	0
30. Marine & Air Officers	0	25	0	0	0	0	0
31. Industry Specific Professionals and Technicians	3	0	0	0	0	0	0
32. Other Cross Industry Professionals and Technicians	1	4	0	0	0	0	0

by Industry (Japan)

(046) Other	(047) Communications	(048) Utilities	(049) Trade	(050) Wholesale Trade	(051) Retail Trader	(052) Finance, Insurance and Real Estate	(053) Services	(054) Government	(055) Education	(056) Medical	(057) Business	(058) Personal, Recreation Miscellaneous
0	39	93	9	12	8	13	271	63	725	655	94	135
0	18	83	2	7	1	8	18	25	1	1	19	25
0	9	77	1	3	9	4	15	21	1	1	6	23
0	4	35	0	0	0	3	12	19	0	0	1	18
0	5	36	0	1	0	1	1	1	0	0	3	1
0	0	3	0	1	0	0	1	0	0	0	1	2
0	0	2	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0
0	9	11	1	4	0	4	3	4	0	0	14	3
0	8	4	1	3	0	4	2	3	0	0	11	1
0	1	7	0	1	0	0	1	2	0	0	2	2
0	0	1	0	1	0	1	11	12	2	1	33	12
0	0	1	0	1	0	0	5	0	2	1	1	11
0	0	0	0	1	0	1	6	12	0	0	33	1
0	0	0	0	0	0	0	3	0	0	0	0	6
0	0	0	0	0	0	0	3	7	0	0	0	5
0	1	2	4	1	5	1	84	8	8	650	1	4
0	6	0	0	0	0	0	118	0	705	0	0	24
0	0	1	0	0	0	0	0	1	0	0	0	0
0	12	0	2	2	2	1	26	3	1	2	25	52
0	2	1	1	1	1	2	7	8	7	0	16	8

Occupations	(001) Agri., forestry & fishery	(002) Agri.	(003) forestry	(004) fishery	(005) Mining & quarrying	(006) Coal	(007) Metal
1. Professionals and Technicians	2	2	2	137	99	99	109
2. Engineers and Technicians	0	0	1	12	87	89	80
3. Engineers	0	0	0	3	24	23	22
4. Civil & Architects	0	0	0	0	2	2	5
5. Electrical	0	0	0	0	2	2	0
6. Mechanical	0	0	0	2	3	3	0
8. Chemical	0	0	0	0	1	0	0
9. Metallurgical	0	0	0	0	15	14	17
10. Ind. Specific	0	0	0	1	2	1	0
12. Technicians	0	0	1	9	63	66	58
17. Ind. Specific	0	0	0	0	1	1	1
20. Other	0	0	0	1	2	2	3
	0	0	0	0	1	1	3
21. Natural Scientists	0	0	0	0	44	48	30
	0	0	0	0	3	3	9
23. Other Professional Natural Scientists	0	0	1	2	2	1	1
24. Natural Science Technicians	0	0	1	6	11	11	10
25. Accountants	1	1	1	3	6	3	7
	0	0	0	0	0	0	0
27. Lawyers	0	0	0	0	1	0	3
28. Medical & Health	1	1	1	3	4	3	4
29. Teachers							
	0	0	0	0	0	0	3
30. Marine & Air Officers	0	0	0	0	1	1	1
	0	0	0	2	0	0	3
31. Industry Specific Professionals and Technicians	0	0	0	0	3	3	11
	0	0	0	0	1	1	1
32. Other Cross Industry Professionals and Technicians	1	0	0	120	0	0	0
	0	0	0	0	1	1	3
	0	0	0	0	0	1	1

Note : The figure in this table means the number of people per 1000 employees in each industry.
Source : Provided by IBRD

by Industry (West Germany)

(008) Petroleum & Natural Gas	(009) Quarrying & Other	(010) construction	(011) Manufacturing	(012) Food & Beverages	(013) Tobacco & Tabacco Products	(014) Textile Mill Products	(015) Clothing & Other Fabri-cated Textiles	(016) Footwear	(017) Leather & Its Products Including Footwear	(018) Leather & Its Products Including Footwear	(019) Furniture & Fixtures
172	68	44	78	19	24	39	19	23	24	23	107
101	58	41	57	9	19	27	13	15	20	17	7
50	51	24	22	4	6	9	2	2	5	4	1
5	2	21	1	0	1	0	0	0	0	0	0
0	1	0	4	0	0	0	0	0	0	0	0
8	5	1	8	1	3	1	0	0	0	0	0
4	1	0	2	1	0	0	0	0	2	1	0
28	12	0	0	0	0	0	0	0	1	0	0
5	1	1	6	3	2	9	2	2	0	0	0
51	37	17	35	5	13	18	11	12	2	2	1
5	2	0	3	0	0	0	0	0	14	13	6
1	0	0	5	0	1	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0	2	1	0
1	17	0	0	0	0	0	0	0	0	0	0
1	3	0	0	0	0	0	0	0	0	0	0
8	4	4	7	0	1	1	0	0	0	0	0
33	9	40	20	4	11	17	11	12	0	0	1
43	8	1	8	4	1	3	0	0	12	12	5
3	0	0	1	0	0	0	0	0	2	1	0
22	1	0	0	0	0	0	0	0	0	0	0
19	7	0	7	4	1	3	0	0	0	0	0
1	0	0	0	0	0	0	0	0	1	1	0
8	1	0	2	1	1	1	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0
3	0	0	4	3	1	1	0	0	0	0	0
3	0	0	0	0	0	1	1	0	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0
6	1	2	7	1	1	6	4	7	0	0	0
0	0	0	0	0	0	0	0	0	1	5	99
									0	0	0

1970

Professionals and

Occupations	(020) Lumber & Wood Products, Except Furniture	(021) Lumber & Wood Products, Including Furniture	(022) Paper & Paper products	(023) Printing & Publishing	(024) Rubber Products	(025) Chemicals & Chemical Products	(026) Petroleum Coal & Products
1. Professionals and Technicians	0	20	34	103	55	153	152
2. Engineers and Technicians	0	15	23	14	45	82	102
3. Engineers	0	4	7	3	15	40	54
4. Civil & Architects	0	1	0	0	1	2	5
5. Electrical	0	0	0	0	1	1	1
6. Mechanical	0	0	2	0	5	7	18
8. Chemical	0	0	1	0	2	22	17
9. Metallurgical	0	0	0	0	0	0	0
10. Ind. Specific	0	2	4	3	7	7	13
12. Technicians	0	11	16	11	29	42	47
17. Ind. Specific	0	0	0	0	0	3	4
20. Other	0	0	1	0	1	1	1
	0	1	0	0	0	1	2
21. Natural Scientists	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
23. Other Professional Natural Scientists	0	2	2	2	1	1	3
24. Natural Science Technicians	0	9	13	8	23	33	36
25. Accountants	0	0	4	0	5	10	13
	0	0	0	0	1	2	1
27. Lawyers	0	0	0	0	0	0	2
28. Medical & Health	0	0	4	0	4	48	30
29. Teachers							
	0	0	0	0	0	0	1
30. Marine & Air Officers	0	0	1	1	2	3	7
	0	0	0	0	0	1	3
31. Industry Specific Professionals	0	0	1	1	1	10	2
and Technicians	0	0	0	0	0	1	0
32. Other Cross Industry Professionals	0	0	0	0	0	0	0
and Technicians	0	3	4	86	2	5	4
	0	0	0	0	0	0	0

Technicians by Industry (West Germany)

(027) Stone & Clay Products	(028) Glass, Stone & Glass Products	(029) Metal & Metal Products	(030) Primary Metals	(031) Iron & Steel	(032) Non-ferrous	(033) Fabricated Metal Products	(034) Machinery	(035) Electrical Machinery & Equipment	(036) Transportation Equipment	(037) Motor Vehicles etc.	(038) Professional & Scientific Instruments
46	45	65	62	0	0	68	117	130	93	94	162
37	33	53	45	0	0	62	109	112	80	80	57
17	14	17	16	0	0	19	38	49	30	30	16
8	5	2	1	0	0	2	1	1	1	1	0
0	0	0	1	0	0	1	2	28	2	2	4
2	2	8	5	0	0	11	16	8	20	20	7
1	1	0	1	0	0	0	1	1	0	0	0
1	1	2	3	0	0	0	0	0	0	0	0
5	5	5	5	0	0	5	9	11	7	7	5
20	19	35	29	0	0	42	71	63	51	30	41
0	0	1	1	0	0	1	2	17	1	1	3
1	1	6	4	0	0	8	15	5	11	11	4
3	2	1	1	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
5	5	8	4	0	0	13	21	10	9	8	8
10	11	19	19	0	0	19	33	30	29	29	25
6	6	8	12	0	0	2	7	10	4	4	4
0	0	0	0	0	0	0	0	3	1	1	1
0	0	0	0	0	0	0	0	6	0	0	0
6	6	7	12	0	0	2	2	8	3	3	3
0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	2	0	0	1	2	2	2	2	1
0	0	0	0	0	0	0	1	0	0	0	0
0	1	1	1	0	0	0	1	1	1	1	94
0	0	0	0	0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0	0	1	0	0
1	2	2	1	0	0	2	3	3	3	3	5
0	0	0	0	0	0	0	0	0	0	0	0

Occupations	(039) Manufacturing Miscellaneous (Including Instruments)	(040) Transportation and Warehousing	(041) Railroad	(042) Trucking	(043) Water	(044) Air	(045) Warehousing
1. Professionals and Technicians	26	48	36	10	274	74	0
2. Engineers and Technicians	19	20	33	7	21	51	0
3. Engineers	4	12	23	2	7	17	0
4. Civil & Architects							
5. Electrical	0	1	2	1	1	2	0
6. Mechanical	0	0	1	0	0	1	0
8. Chemical	1	1	1	0	4	9	0
9. Metallurgical	0	0	0	0	0	0	0
10. Ind. Specific	0	0	0	0	0	0	0
	2	9	20	1	2	5	0
12. Technicians							
17. Ind. Specific	15	8	10	4	14	35	0
20. Other	1	1	1	0	1	3	0
	1	0	0	0	1	7	0
21. Natural Scientists	0	0	0	0	0	1	0
	0	0	0	0	0	0	0
23. Other Professional Natural Scientists	0	0	0	0	0	0	0
24. Natural Science Technicians	2	1	2	1	1	2	0
	12	6	6	3	12	22	0
25. Accountants							
	1	0	0	0	0	1	0
27. Lawyers	0	0	0	0	0	1	0
28. Medical & Health	0	0	0	0	0	0	0
29. Teachers	1	0	0	0	0	0	0
30. Marine & Air Officers	0	0	0	0	0	0	0
	0	1	0	1	0	5	0
31. Industry Specific Professionals	0	0	0	0	0	1	0
and Technicians	0	0	1	0	0	3	0
32. Other Cross Industry Professionals	1	1	0	2	1	6	0
and Technicians	0	25	1	0	250	0	0
	4	1	0	1	1	8	0
	0	0	0	0	0	0	0

by Industry (West Germany)

(046) Other	(047) Communications	(048) Utilities	(049) Trade	(050) Wholesale Trade	(051) Retail Trader	(052) Finance, Insurance and Real Estate	(053) Services	(054) Government	(055) Education	(056) Medical	(057) Business	(058) Personal, Recreation Miscellaneous
7	52	115	51	20	68	25	286	0	752	710	513	99
4	51	103	8	12	6	15	42	0	29	2	272	30
1	23	47	2	5	1	9	22	0	13	1	172	13
0	3	8	0	1	0	7	16	0	4	0	139	9
0	15	22	0	1	0	0	1	0	2	0	5	1
0	0	6	1	1	0	0	2	0	2	0	15	1
0	0	1	0	0	0	0	1	0	4	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	4	8	1	2	0	2	2	0	2	0	12	2
3	28	56	6	7	5	6	21	0	16	2	100	17
0	12	8	2	1	3	0	1	0	1	0	2	1
0	0	3	0	1	0	0	1	0	1	0	5	0
0	0	4	0	0	0	2	2	0	0	0	12	1
0	0	1	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	2	0	0	0	5	2
0	4	12	0	1	0	2	6	0	2	0	58	3
2	11	29	3	5	2	2	9	0	11	1	18	10
0	0	5	0	1	0	1	4	0	16	1	5	2
0	0	0	0	0	0	1	1	0	7	0	1	0
0	0	0	0	0	0	0	1	0	2	0	1	0
0	0	5	0	0	0	0	2	0	7	1	3	2
0	0	0	0	0	0	1	9	0	0	0	126	1
1	0	2	1	1	0	2	2	0	3	1	8	1
0	0	1	0	0	0	3	8	0	0	0	59	7
0	0	1	31	3	46	1	98	0	15	686	2	13
0	0	0	0	0	1	1	96	0	666	14	1	15
1	0	0	0	0	0	0	1	0	0	0	0	1
1	0	2	10	3	14	2	19	0	21	2	39	20
0	0	0	0	0	0	0	6	0	1	4	0	8

Occupations	(001) Agri., forestry & fishery	(002) Agri.	(003) forestry	(004) fishery	(005) Mining & quarrying	(006) Coal	(007) Metal
1. Professionals and Technicians	14	7	40	2	121	38	97
2. Engineers and Technicians	2	0	13	2	55	22	49
3. Engineers	1	0	6	2	31	11	28
4. Civil & Architects	1	0	4	1	3	2	3
5. Electrical	0	0	0	0	1	1	1
6. Mechanical	0	0	0	1	3	2	3
8. Chemical	0	0	0	0	4	1	3
9. Metallurgical	0	0	0	0	1	0	0
10. Ind. Specific	0	0	0	0	1	0	1
	0	0	0	0	15	5	14
12. Technicians	0	0	1	0	2	1	1
17. Ind. Specific							
20. Other	1	0	7	1	24	11	22
	0	0	1	0	7	4	8
21. Natural Scientists	0	0	1	0	7	5	5
	1	0	4	0	11	2	9
23. Other Professional Natural Scientists							
24. Natural Science Technicians	4	2	17	11	43	4	32
	0	0	0	0	4	0	6
25. Accountants	2	1	12	6	29	2	14
	1	1	5	5	10	2	12
27. Lawyers							
28. Medical & Health	1	0	4	0	11	6	6
29. Teachers	0	0	1	0	5	2	3
	0	0	0	0	1	1	0
30. Marine & Air Officers	4	4	1	0	3	2	4
	0	0	0	0	1	1	1
31. Industry Specific Professionals							
and Technicians	3	0	3	68	1	0	0
32. Other Cross Industry Professionals	0	0	0	0	0	0	0
and Technicians	0	0	0	0	1	1	1

Note : The figure in this table means the number of people per 1000 employees in each industry.

Source : Provided by IBRD

by Industry (Canada)

(008) Petroleum & Natural Gas	(009) Quarrying & Other	(010) construction	(011) Manufacturing	(012) Food & Beverages	(013) Tobacco & Tabacco Products	(014) Textile Mill Products	(015) Clothing & Other Fabricated Textiles	(016) Footwear	(017) Leather & Its Products Including Footwear	(018) Leather & Its Products Including Footwear	(019) Furniture & Fixtures
235	108	32	64	28	42	34	20	16	19	17	24
99	43	20	27	6	13	11	2	3	7	4	9
60	21	9	17	5	10	9	1	0	0	0	0
5	2	6	1	0	2	1	0	0	0	0	0
1	1	1	3	0	0	0	0	0	0	0	0
5	2	1	4	2	2	2	0	0	1	1	1
9	2	0	6	2	5	4	1	1	2	2	3
5	1	0	1	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
30	11	0	1	0	0	0	0	0	0	0	0
3	2	1	1	0	1	1	0	0	0	0	0
39	21	11	10	1	3	2	1	0	2	1	4
4	6	3	0	0	0	0	0	0	0	0	0
15	6	3	5	0	1	1	0	0	1	0	3
20	10	6	55	1	2	1	0	0	1	1	1
15	50	1	8	6	7	6	0	0	1	1	0
1	2	0	2	2	2	1	0	0	0	0	0
63	39	0	1	1	0	0	0	0	0	0	0
10	9	0	5	4	5	5	0	0	0	0	0
33	9	9	10	9	8	7	4	6	4	5	6
18	2	0	5	2	7	3	0	2	0	1	1
4	0	0	0	0	0	0	0	0	0	0	0
1	2	0	3	1	4	1	0	0	0	0	0
0	1	0	0	0	1	0	1	1	0	1	0
4	1	0	1	3	0	0	0	0	0	0	0
0	0	0	5	0	1	0	0	0	0	0	0
1	1	1	5	1	2	5	13	5	4	5	7

Occupations	(020) Lumber & Wood Products, Except Furniture	(021) Lumber & Wood Products, Including Furniture	(022) Paper & Paper products	(023) Printing & Publishing	(024) Rubber Products	(025) Chemicals & Chemical Products	(026) Petroleum Coal & Products
1. Professionals and Technicians	19	21	53	106	55	123	169
2. Engineers and Technicians	6	7	23	5	23	32	72
3. Engineers	4	4	17	3	18	26	56
4. Civil & Architects	1	1	3	0	0	1	6
5. Electrical	0	0	1	1	1	1	2
6. Mechanical	1	1	5	1	4	5	11
8. Chemical	1	2	5	1	9	6	7
9. Metallurgical	0	0	2	0	3	11	23
10. Ind. Specific	0	0	0	0	0	0	1
	0	0	0	0	0	0	7
12. Technicians	0	0	1	0	1	1	1
17. Ind. Specific							
20. Other	3	3	6	2	5	6	16
	0	0	0	0	0	0	3
21. Natural Scientists	2	2	3	1	2	3	5
	1	1	3	1	2	3	9
23. Other Professional Natural Scientists							
24. Natural Science Technicians	1	1	9	0	11	53	42
	0	0	1	0	3	17	12
25. Accountants	1	0	1	0	0	3	4
	1	0	7	0	7	33	27
27. Lawyers							
28. Medical & Health	7	7	9	8	12	16	25
29. Teachers	1	1	5	5	4	7	17
	0	0	0	0	0	0	2
30. Marine & Air Officers	2	2	2	0	1	10	3
	0	0	0	1	1	0	2
31. Industry Specific Professionals							
and Technicians	1	0	1	0	0	0	3
32. Other Cross Industry Professionals	0	0	0	65	0	1	1
and Technicians	1	3	3	22	3	3	3

by Industry (Canada)

(027) Stone & Clay Products	(028) Glass, Stone & Glass Products	(029) Metal & Metal Products	(030) Primary Metals	(031) Iron & Steel	(032) Non-ferrous	(033) Fabricated Metal Products	(034) Machinery	(035) Electrical Machinery & Equipment	(036) Transportation Equipment	(037) Motor Vehicles etc.	(038) Professional & Scientific Instruments
48	54	61	72	55	94	52	106	129	64	46	231
19	24	35	38	33	62	33	62	94	40	27	75
10	15	20	24	20	31	16	36	49	28	20	37
4	3	3	3	2	4	3	2	1	2	1	2
1	1	1	1	1	2	1	6	26	1	1	14
2	3	5	5	5	6	5	15	4	8	8	6
3	6	6	7	7	7	5	11	14	11	10	11
0	1	1	2	0	4	0	0	0	0	0	0
0	0	2	3	3	4	0	0	0	0	0	0
0	0	0	1	0	2	0	0	0	5	0	0
1	1	1	1	1	2	1	2	2	1	0	3
9	9	16	14	13	15	17	26	45	12	7	38
0	0	0	1	1	0	0	0	0	0	0	0
7	6	10	6	5	6	13	17	14	7	4	11
2	3	6	8	7	9	4	9	32	5	3	27
7	8	9	18	12	26	2	2	4	2	1	11
2	2	2	4	2	6	0	0	1	0	0	2
1	0	2	3	3	3	0	0	0	0	0	1
4	5	6	11	7	17	2	1	3	2	1	7
13	13	9	7	7	8	12	14	14	8	9	4
1	2	3	5	4	7	1	21	10	6	6	12
0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	2	2	2	1	1	1	2	2	112
1	0	0	0	0	1	0	1	1	0	1	2
2	1	0	0	0	0	0	0	0	1	0	0
0	0	0	0	0	1	0	1	2	1	0	2
5	5	2	2	1	3	3	4	3	2.	1	3

Professionals and Technicians

Occupations	(039) Manufacturing Miscellaneous (Including Instruments)	(040) Transportation and Warehousing	(041) Railroad	(042) Trucking	(043) Water	(044) Air	(045) Warehousing
1. Professionals and Technicians	65	58	37	8	178	228	8
2. Engineers and Technicians	11	16	18	1	15	29	1
3. Engineers	7	8	10	1	10	19	1
4. Civil & Architects	1	3	5	0	4	2	1
5. Electrical	0	1	2	0	1	2	0
6. Mechanical	2	1	1	0	3	3	0
8. Chemical	4	1	2	0	1	2	0
9. Metallurgical	0	0	0	0	1	0	0
10. Ind. Specific	0	0	0	0	0	0	0
	0	1	0	0	0	9	0
12. Technicians	0	0	0	0	0	0	0
17. Ind. Specific							
20. Other	3	9	8	0	5	9	1
	0	2	1	0	1	0	0
21. Natural Scientists	2	2	2	0	1	2	0
	1	5	4	0	3	7	1
23. Other Professional Natural Scientists							
24. Natural Science Technicians	4	1	1	0	1	3	0
	2	0	0	0	0	0	0
25. Accountants	0	0	0	0	0	1	0
	2	1	0	0	1	2	0
27. Lawyers							
28. Medical & Health	10	6	5	5	10	10	6
29. Teachers	1	4	7	1	5	11	0
	0	0	1	0	1	0	0
30. Marine & Air Officers	1	1	1	0	1	0	0
	0	2	1	0	0	14	0
31. Industry Specific Professionals and Technicians	0	26	2	0	144	158	0
32. Other Cross Industry Professionals	0	0	1	0	0	1	1
and Technicians	38	1	1	0	1	1	0

by Industry (Canada)

(046) Other	(047) Communications	(048) Utilities	(049) Trade	(050) Wholesale Trade	(051) Retail Trader	(052) Finance, Insurance and Real Estate	(053) Services	(054) Government	(055) Education	(056) Medical	(057) Business	(058) Personal, Recreation Miscellaneous
42	81	137	28	35	25	101	388	152	655	620	399	105
27	37	101	3	8	1	5	26	37	5	1	154	3
9	23	53	2	5	0	3	13	17	2	1	81	2
5	2	12	0	1	0	1	7	8	1	0	44	0
1	18	28	0	1	0	0	1	2	0	0	9	0
1	1	55	0	1	0	0	1	1	0	0	10	0
1	2	3	0	1	0	1	1	2	0	0	5	0
0	0	1	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	1	0	0	3	0
1	1	3	0	0	0	0	2	3	0	0	9	0
18	13	48	1	4	1	1	13	20	3	0	73	1
5	0	4	0	0	0	0	2	4	0	0	14	0
3	3	15	1	2	0	1	5	7	1	0	37	0
10	10	28	1	2	0	0	5	9	2	0	21	1
1	0	8	1	2	0	1	13	22	16	4	20	1
0	0	1	0	0	0	0	2	2	2	1	3	0
1	0	3	0	1	0	0	4	10	3	1	7	0
1	0	4	0	1	0	0	7	10	11	3	10	0
4	8	10	8	16	5	79	15	17	4	3	93	4
2	9	10	1	4	1	11	5	10	4	1	15	1
0	0	1	0	0	0	1	8	5	0	0	77	0
4	0	1	8	1	11	1	131	17	10	566	4	7
1	4	2	1	0	1	1	148	11	588	11	1	8
1	0	0	0	1	0	0	1	4	0	0	1	0
0	15	1	1	0	1	1	15	5	9	3	5	56
2	8	3	5	2	6	1	24	22	18	30	29	25